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EDITORIAL.

Poultry in Malaya.

One approaches the subject of poultry-keeping in Malaya with some diffidence, because it is a subject which, in spite of the pioneer work of a number of enthusiasts and the investigations of the Department of Agriculture, still bristles with uncertainties.

While not wishing to belittle the work of those who, at considerable personal expense, have in the past imported pedigree stock, one cannot help being struck by the fact that much of the experience gained by these pioneers has been lost to the country. They were ever ready to give specific information to those who visited them, but unfortunately they have not placed on record detailed accounts of the methods they employed and the results—favourable or otherwise—of the trials conducted by them. Had they pooled their information it is possible that our knowledge of this subject, and their own, would have been materially advanced.

Many aspects of poultry husbandry cannot be studied accurately by the private individual. We are informed, for example, that two flocks of not less than fifty birds each are essential to provide a satisfactory degree of significance on any one problem of nutrition. Very few individuals in this country are in a position to carry out exhaustive investigations of this character, which points to the necessity of establishing long-range research at a convenient centre.

The work of the Department of Agriculture at the School of Agriculture, Malaya, and also at certain of the Agricultural Stations, has been confined, so far, almost entirely to a preliminary study of imported pure breeds and their progeny, of housing, and of balanced rations obtainable, as far as possible, from local products. Some success in these directions has already been achieved, and propaganda has been initiated to improve the conditions under which poultry are kept on small holdings, but a number of important problems have arisen which require detailed investigation. An examination of the results so far obtained, reveals that there is as yet no unanimity of opinion. This indicates the desirability of re-organising and centralising the investigations so that fundamental research can be placed on a basis which will render the results authoritative, and enable advisory work to be conducted with assurance.

Poultry husbandry, in fact, remains very largely the problem that it was, and any well-informed contribution to local information on this subject is of value. For this reason, we publish an article in this number, entitled "Poultry Husbandry in Malaya" by Mr. G. E. Mann, of the School of Agriculture. This is not designed to be an exhaustive account of the subject; this would be impossible at the present stage. It is, however, a statement of the present position of poultry keeping in Malaya. It marshals a number of undisputed facts, and draws attention to points which are apt to be overlooked or misunderstood, especially in relation to nutrition. The growing volume of correspondence which we receive from all parts of Malaya is evidence that poultry husbandry is engaging the attention of a constantly increasing number of people, and to such as these, this article will doubtless prove of considerable interest.

The Control of Fruit Canning.

Recent numbers of this Journal have contained information concerning present-day fruit canning methods and trade in the United Kingdom. This survey of the industry is concluded by the inclusion in this issue of an article on "The Control and Organisation of Fruit Canning in the United Kingdom". The growth of the trade has rendered a measure of control desirable; but further than this, control and organisation has contributed to the growth of the trade. The present article sets forth the factory conditions insisted upon, details of the voluntary National Mark system of grading and inspection, which has proved to be a factor considerably influencing the extension of the trade, and the advertising and trade organisation which has further strengthened the market for the United Kingdom canner. A watchful eye is kept on the industry by the National Food Canning Council, which body has been able to safeguard the consumer and protect the interests of canners and growers. The organisation has the advantage of efficient technical advice, while research is constantly bringing about improvements which are to the benefit of both producers and consumers.

Comparisons between the United Kingdom canning industry and that in Malaya are inevitable. In the course of these articles several such comparisons have been made. There is evidence that the Malayan canning interests are becoming more alive to the desirability of re-organisation so that the enviable position of Malayan canned pineapples on the Home market may be fully maintained, while our sales in other markets may be stimulated and increased.

Fallow Crops on Padi Land.

In view of the fact that in most parts of Malaya the padi crop occupies the land for only about six months in the year, suggestions have, from time to time, been advanced for more intensive use of these areas by producing two crops of padi per annum, or by the utilization of the areas for other crops after the padi has been removed.

To produce two crops of padi per annum, the cultivation of varieties of short maturation period would be necessary in place of those at present planted which occupy the land for longer periods. There is a definite relationship between the maturation period and yield, and it is doubtful whether the cultivation of two light crops per annum instead of one heavy crop would prove advantageous. In many areas, also, such a course would not be feasible owing to irrigation difficulties.

The alternative of planting crops other than padi in the "off-season" suggests itself and is, in fact, occasionally practised on a small scale by Asiatics. Experiments conducted by the Department of Agriculture between 1932 and 1934 and summarised in this number indicate that the yield of crops so grown is disappointingly low. On the other hand, the observations made have not revealed any reduction in yield of padi as a result of two seasons' fallow cropping.

Original Articles.

POULTRY HUSBANDRY IN MALAYA

BY

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Poultry in the Village.

In common with prevailing conditions throughout the inhabited parts of the tropics, the Malayan homestead is not complete without its complement of fowls. Underfed, badly housed, if housed at all, mongrel to a degree, the vast majority obtain a livelihood by a process of scavenging. This state of affairs is regarded by the Malays with such complacency that it has provided an expression in the vernacular which is exactly parallel to the English metaphor of "leading a hand-to-mouth existence".* Here and there, an occasional Chinese may be found digging up the soil and exposing its scanty population of worms and grubs to the eager beaks of his flock; but, apart from a few isolated and sporadic efforts, there has been practically no effort at poultry husbandry as understood in the temperate zones, and the production of eggs and flesh as an organised industry is still largely undeveloped. Contrary to first impressions, however, the typical Malayan poultry farmer is not entirely devoid of an economic sense. His cost of production is negligible and his produce, however small, is almost all profit, whether it is consumed at home or sold for cash. In such circumstances, it is open to doubt whether any marked approach can be made to better standards of management and breeding unless it is first demonstrated conclusively that the greater cost of production involved will be repaid by even greater profits. One cannot be too cautious in problems of this kind, and nothing but the results of practical investigation should be accepted as reliable evidence. The required information has not been forthcoming in the past, but investigations have recently been inaugurated by the Department of Agriculture with a view to exploring the whole problem, first in its wider aspects and subsequently in detail.

So far, it would appear that improved poultry farming might, with efficient management, yield returns in Malaya commensurate at least with those obtainable in England and elsewhere; but that profits would not be sufficient to justify high wages or to tolerate inefficient management.

Malayan Production.

No complete census has ever been made of poultry in Malaya. As already stated, there is hardly a homestead in the country without at least a few fowls. In addition, ducks are fairly common, while pigeons are occasionally kept by Chinese agriculturists; but geese and turkeys are comparatively rare. A

* *"Kais pagi makan pagi, kais petang makan petang"* (M) = "Eating in the morning what one has scratched up that morning; eating in the afternoon what one has scratched up that afternoon".

deliberate census would not only be very difficult and costly, but it would probably prove to be so inaccurate under present conditions that it would be of doubtful value. In 1933, however, it was estimated that there were at least two million head of poultry in the Unfederated Malay States and one and a half millions in three of the four Federated Malay States. It is therefore not improbable that the total for Malaya, which includes the more densely populated Straits Settlements, is in the neighbourhood of six millions. The produce is of poor size and quality, market prices are low, and the annual value of internal production is correspondingly small. There are no exports.

Imports.

That there is scope for the increased production of both eggs and table birds is apparent from the fact that Malaya is not self-supporting in respect of these foodstuffs. The average value of imported poultry produce for the ten year period 1924—1933 was nearly $1½ millions per annum, a by no means inconsiderable sum to leave the country when it is realised that local poultry keeping, even if extended considerably, need not compete with other agricultural pursuits. Live poultry come mainly from Siam, while eggs are imported almost entirely from China and French Indo-China.

Breeds.

This country has its own variety of fowl, namely the Malayan game fowl. It is characterised by a broad head with overhanging eye-brows, the beak, skull and top of the neck forming practically a continuous curve like the upper half of a circle; walnut comb; long, straight limbs; square and prominent shoulders; sloping back; tail carried rather low, feathers free from lacing and spangling, narrow and short, causing the bird to look lighter in weight than other game varieties with which, however, it compares favourably when placed on the scale. The Malayan game fowl has been considerably improved in the hands of European fanciers and is usually represented at the larger poultry shows in England, but good specimens are rare in this country. Its walnut comb is of scientific interest, as it can be reproduced by crossing the rose comb with the pea comb—a discovery which has thrown considerable light on the phenomena of heredity.

As already stated, the vast majority of domestic fowls in the Peninsula are sheer mongrels. In such circumstances, it is impossible to describe them precisely. The average hen reaches a live weight of about 3½ lbs., with an egg production of about 30 per cent. (*i.e.* about 100 eggs per annum) during the pullet year. The eggs vary considerably, but seldom exceed 1½ ozs. in weight, and they are mainly light-shelled. The Chinese keep a type of fowl known locally as the "Canton" type. It is somewhat better than that kept by Malays and is presumably the offspring of remote imported ancestors.

Various pure breeds have been introduced privately from time to time, such as the Barred Rock, Leghorn, Australorp, Black Orpington, Sussex and Rhode Island Red; but these importations have usually proved a loss to the owners owing to the ravages of disease or the depredations of thieves. Increasing attention, however, is now being devoted to the commercial prospects of pure and cross-bred birds. Without being definite on the subject, in view of the fact that our knowledge is still imperfect in various directions, it is considered that the Rhode Island Red offers the best prospects for egg production and that the Light Sussex may prove a good second. At the School of Agriculture, Serdang, the former breed has been shewn to stand up to the climate and to retain its fertility and productivity for two generations, but experience of subsequent generations has yet to be obtained. Parallel investigations with the Light Sussex and White Leghorn are inconclusive, but there is a grave doubt whether the latter possesses the necessary stamina for a productive life on the plains. Information is also being sought as to whether, from the commercial point of view, pure-breds will prove superior to cross-breds or *vice versa*. It is not unreasonable to assume that a policy of upgrading, if soundly conceived and boldly executed, would lead to fruitful results and possibly to the evolution of one or more new Malayan breeds. The problem is complicated, however, by the necessity of determining whether or not the local fowl is able to contribute anything in this process of upgrading. One usually expects native stock to possess at least some degree of resistance to disease, but it has yet to be established that this desirable character actually does exist.

Management.

As applied to conditions typical of Malaya as a whole, the term "management" is a misnomer, for the average flock receives practically no attention of any kind. Fowls are generally allowed free range by which they acquire an uncertain amount of food in the form of insects, seeds, grass, household scraps, and occasionally a handful of *padi*,* but little if any effort is made to provide a definite and regular ration or to employ suitable and hygienic utensils. In the circumstances, food and water are liable to serious pollution and the fowls are doubly handicapped by insufficient and contaminated food. Similar neglect applies to housing, breeding and rearing. The flock must find its own protection, except where it is cooped up by night beneath the house where sunlight cannot enter and where the ground inevitably becomes foul at an early stage. The cockerels are not segregated from the pullets, with the result that inbreeding with all its attendant evils is the rule and not the rare exception. Eggs are laid in quiet but scattered places, frequently none too clean, and the task of collection is relatively slow and uncertain.

For hatching, the broody hen is commonly employed. There is seldom any difficulty in finding a broody hen when required, but the preliminary dusting with insect powder which forms a part of standard practice in England

* *Padi* (M) = unhusked rice.

has no counterpart at present in the Malayan homestead. The young chicks, which hatch out in anything from 19 to 21 days, receive no special care from the owner; like their parents, they have largely to fend for themselves, and losses through malnutrition, pests and exposure are consequently heavy.

Advisory work in relation to the improvement of poultry husbandry among small-holders is now proceeding along simple lines throughout the country, agricultural officers devoting a considerable portion of their time to encouraging a better standard of management. They are equipped with models of well ventilated slatted-floor night-arks, food and water utensils, nesting boxes, foster-mothers and so on, and they give periodical lantern lectures with the assistance of a propaganda caravan maintained conjointly by the Department of Agriculture, the Co-operative Societies Department, and the Rubber Research Institute. In addition, information as regards feeding is being accumulated and disseminated, and supplies of pure-bred and upgraded cockerels are gradually becoming available for distribution from the School of Agriculture and Agricultural Stations generally. Progress is of necessity slow, but the important fact is that a beginning has been made.

Feeding.

One of the major problems confronting the agricultural instructor and the progressive poultry farmer in Malaya is that of finding a balanced but economical ration which can be kept reasonably free from moulds. As in other countries, cereal grains must form the basis of the food supply, but they should be supplemented by additional proteins. Locally grown cereals are limited to *padi* and maize; while imported cereals such as wheat and oats, together with their offals, are expensive. Local and imported groundnut and soya bean cakes are reasonably cheap, but one must insist on good quality; and animal proteins are essential if a scientifically balanced ration is to be secured. There are at present no suitable supplies of locally manufactured white fish meal or meat and bone meal, and one is more or less compelled to fall back upon imported whale meat meal. Even with these ingredients at hand, dry mash remains in good condition for a few days only, unless stringent precautions are taken to protect it from the atmosphere, and it is generally unsafe to prepare more than a three days' supply at a time.

The following mashes (Table 1) are stated to have been found satisfactory in Malaya. The figures refer to parts by weight.

In addition to the mash, growers are given a gradually increasing—and layers an approximately equal—quantity of *padi* in the evening. The actual weight of mash required by a given bird depends on its size and condition rather than on its age. In general, it is advisable to allow the flock to eat as much dry mash as it can consume before the evening meal of grain, and to reduce the amount of grain if there is any tendency to put on fat. As a

Table 1.
Composition of Mashes.

Ingredients	Young chicks	Growing chicks	Layers
Padi, ground, husk discarded ...	11	23	4
Soya bean (or groundnut) meal ...	4	3	2
Whale meat meal ...	4	3	1
Mineral mixture (60 per cent. steamed bone flour, 20 per cent. salt, 20 per cent. powdered oyster shell) ...	3 per cent.	2 per cent.	2 per cent.
Red palm oil ...	2 „	1 „	1 „

rough indication, mature birds of the light breeds may be expected to eat an average of about 4 ozs. of food a day, while the heavy breeds will consume from 4½ to 5 ozs.

Experiments with these rations at the School of Agriculture during 1934 indicate that the layers' mash is definitely lacking in bulk, for increased production has been secured without lowering the condition of the birds in any way by adding a proportion of fibre to the ration. It might at first sight appear to have been a mistake to discard the *padi* husk, but such is not the case. Given the usual means of grinding *padi* on a small scale, it is impossible to reduce the husk to a coarse powder without grinding the seed itself too fine : in other words, the husk should be discarded, and fibre should be reintroduced in the form of bran.

The claim that red palm oil is a convenient source of vitamin A has been borne out by recent investigations; but there should be no necessity for providing additional supplies of the various vitamins so long as flocks are kept on free range and can get plenty of sunlight, green food, and other natural foodstuffs which supply one or other of these vitamins. Moreover, in these rations, no use is made of yellow maize, the inclusion of which would not only add variety but would also help to improve the colouring of yolks and assist the farmer in culling flocks of the pigmented breeds. Finally, the chick mash would probably be improved by the addition of a trace of iron; while, in the case of laying hens and pullets, it is better to supply broken limestone or oyster shell separately rather than in the mash.

According to Halnan, the composition of the ration should approximate to the following standards, (Table 2) corresponding figures for the above-quoted

rations being included for purposes of contrast. The differences appear to be too large to be ignored, but it must be admitted that Halnan's standards are based on English ideas which have not yet been tried out in Malaya.

Table 2.
Comparative Rations.

Nutrients per 100 parts of ration by weight.

Halnan			Local		
	Digestible Protein*	Starch Equivalent*		Digestible Protein	Starch Equivalent
Young chicks ...	14.0	60.0	Young chicks ...	21.5	78.0
Growing chicks ...	11.5	64.0	Growing chicks ...	14.5	81.5
Layers ...	11.0	61.0	Layers ...	13.7	68.3

Bearing in mind the points which have been indicated above, the following rations (Table 3) have been evolved in accordance with those which at present prevail in temperate countries. They still require to be checked, however, by experimental work in this country.

As a matter of fact, there does not seem to be any obvious reason why the progressive poultry farmer should not adopt the system of feeding laying hens which was first advocated in relation to poultry by von Wendt and has since been approved by the Ministry of Agriculture and Fisheries in England. There is nothing really new in the system, for it has been practised for several years in the feeding of dairy cows. One has merely to devise the ration in two portions, the basic portion being sufficient for maintenance, growth and an anticipated minimum production, while the second and minor portion is readily adjustable to conform with fluctuations in actual production. The advantage of the system is obvious—that, as production varies according to the season, age, and condition of the flock, so the ration can be adjusted to ensure that requirements are met without waste and without overtaxing the digestive and excretory organs.

Thus, taking the case of heavy breeds such as the Rhode Island Red where the average weight of the hen is about 5½ lbs. and the minimum egg

* The Starch Equivalent of a foodstuff may be regarded as indicating its total food value for all purposes of the animal in question, while the Digestible Protein indicates how much of the foodstuff is available for use in building up the nitrogenous parts of the body and its produce. In the same way, it can be said that such-and-such an animal requires so much Starch Equivalent a day, of which so much should be Digestible Protein.

Table 3.
Suggested Rations.

	Ingredients	Young chicks	Growing chicks	Layers
MASH	Padi, ground, husk discarded ...	40	50	15
	Maize, yellow, ground ...	12	15	6
	Bran, white cargo ...	20	15	10
	Groundnut cake (or soya bean meal) ...	11	8	8
	Whale meat meal ...	12	8	8
	Steamed bone flour ...	2½	2½	2½
	Powdered limestone or oyster shell ...	1¾	1	—
	Salt ...	⅝	½	½
	Ferric oxide ...	⅛	—	—
GRAIN	Padi, whole ...	—	—	40
	Maize, kibbled ...	—	—	10
		D.P. | S.E.	D.P. | S.E.	D.P. | S.E.
	100 parts by weight, supplying approximately ...	14.3 | 65.0	12.0 | 69.5	12.0 | 63.5

production may be estimated at 40 2 oz. eggs per 100 days, the basic mash might well consist as follows:—

Padi, ground, husk discarded	...	33 parts
Maize, yellow, ground	...	11 „
Bran, rice *	...	30 „
Groundnut cake meal	...	12 „
Whale meat meal	...	12 „
Mineral mixture (5 parts steamed bone flour to 1 part salt)	...	2 „

The birds, which will consume about 4½ ozs. of food a day, should be allowed 2½ ozs. of the above mash plus about 1¾ ozs. of grain, consisting of 3 parts whole *padi* to 1 part kibbled yellow maize. If actual production is

* Where bran is employed in any considerable quantity (say over 20 per cent.), it should not be too fine in texture, otherwise the mash will form dough-like pellets when wetted by the saliva and will thus prove unpalatable.

above 40 per cent., then a calculated quantity of the following egg-production mash should be given as a wet mash at midday :—

Padi, ground, husk discarded	...	3 parts
Groundnut cake meal	...	1 part
Whale meat meal	...	1 ,,

Five lbs. of this egg-production mash are theoretically capable of producing 47 eggs. In other words, given a flock of 100 Rhode Island Reds laying 50 eggs a day (an increase of 10 eggs a day), one should add about 18 ozs. of wet mash to the daily ration of the flock as a whole.

The only objection to the von Wendt system is that it is not so simple as the customary dry mash and grain method, and that—in the hands of an ignorant farmer—feeding might soon become chaotic. All one can say is that it was designed and is recommended for the benefit of progressive farmers.

Artificial Incubation.

Returning to the subject of hatching, it is of interest to note the large-scale artificial methods used by Chinese poultrymen in the coastal parts of Perak, where considerable numbers of fowls and ducks are raised for sale both locally and in the neighbouring island of Penang. Each hatchery comprises a number of bamboo or rotan baskets, some two feet in diameter and three feet deep, supported on a wooden frame and insulated with dry *padi* husk. The sides and bottom of the basket are lined with removable cardboard, and a sheet of canvas is placed on the bottom. Alternate layers of eggs and canvas are then placed inside the basket until it is full, and the top is covered with sacking. One basket accommodates about 1,000 eggs, which should be new-laid and exposed to the sun for an hour or so before being placed in the basket. After about a week, the eggs are candled against a hole in a darkened window, and the fertile eggs are subsequently removed one or two days before hatching is complete. They are then laid on sacking on a stand in the centre of the room, and are covered with a blanket in which holes have been cut to enable the baby chicks or ducklings to emerge. When dry, they are placed in shallow, open, rotan baskets outside the house. The percentage hatch is about 70. Unfortunately, the same degree of skill and ingenuity is not shewn in subsequent stages, and mortality is usually high, particularly during the first three days.

Incubator machines are almost unknown in Malaya outside a few more enlightened centres such as the various Agricultural Stations throughout the Peninsula. Where they are employed, satisfactory results are usually obtainable so long as factors governing fertility are carefully observed and the temperature of the machine adjusted to suit local climatic conditions. The temperature of a broody hen on the plains in this country is not more than 101°F., as compared with 103°F. in England, and the incubator (the operation of which should imitate nature as far as possible) should therefore be run at an initial temperature of 100°—101°F., falling gradually to 99°—100°F. by the

end of the hatch. The chicks should be removed to an outdoor brooder as soon as they are dry, the usual precautions being taken not to help a chick out of its shell or to keep any that are deformed or obviously weak; and they can be hardened off in three to seven days according to weather conditions at the time. The European type of foster-mother has given excellent results, but artificial heat is really unnecessary except during inclement weather, when a hurricane lamp suspended from the roof is sufficient. A permanent heating system is thus merely an extravagance. In fact, all that is required for small-scale operations is a packing case, such as is used for tinned provisions, provided with a roof and leading to one or two similar boxes covered with wire netting. The principal box, with the chicks, can be lifted inside the house at night, and replaced on clean, dry ground the following morning. As a refinement, whereby the foster-mother can be left out all night without even the necessity for a lamp, the apparatus should be constructed on the hay-box principle. Provision must be made, of course, for adequate ventilation without draughts and for protection from rats.

Table Poultry.

The standard of table poultry in Malaya is almost as unsatisfactory, from the European point of view, as that of eggs. The greater part of the population nevertheless appears to be quite satisfied with what is at present obtainable. The demand for large birds suitable for roasting is negligible in comparison with that for small, cheap birds good enough for inclusion in a curry. These latter are marketed alive at from 2½ to 3½ lbs. weight. They are no longer young, and they are usually in poor condition. Imported dressed poultry, on the other hand, is of very good quality but is expensive. There is at least a *prima facie* case for encouraging the improvement of local table birds by increasing the proportion of meat to bone, provided that the size and cost per pound are kept within the limits of the average man's purse. The slow rate of growth of the local fowl renders it coarse and uneconomical as a commercial table-bird. Better feeding alone cannot entirely overcome this objection, as body size is fundamentally a matter of heredity; and the possibility of upgrading or of using cross-bred cockerels (*e.g.* R.I.R. x Light Sussex) is therefore indicated in order to produce a bird which can be sold at a profit either direct from the run at 12—13 weeks of age or a fortnight later after crate-fattening.

The demand for *petit poussins* and capons is comparatively small. The former do find their way into hotels and better-class restaurants; but the latter are in demand only in connexion with certain seasonal festivals such as Chinese New Year. The operation of caponising is usually conducted by wandering Chinese whose charges are fairly reasonable and whose work is tolerably satisfactory. Seeing that the operation is comparatively easy and

requires very little equipment, there does not seem to be any reason why it should not be carried out by the actual farmers themselves.

Disease.

There has been a tendency in Malaya for some time past to assert that the sole difficulty in the way of improving local poultry is the incidence of disease, and that the only effort which is fundamentally necessary is the provision of adequate means of prevention and cure. On the other hand, it has been claimed in various quarters that the disease problem is purely secondary, resulting from improper housing and feeding; and that, once these conditions of management are improved, disease will automatically be reduced to insignificant proportions. There is, however, no question that disease does at present constitute a very serious obstacle to successful poultry farming in Malaya. Flocks of chickens are periodically decimated or even entirely wiped out by waves of disease the precise nature of which is at present unknown. It is commonly referred to as "*the* disease"; but it is by no means improbable that more than one specific organism is actually involved. Judging by experience elsewhere, it is to be anticipated that, whereas careful housing, feeding and breeding may rapidly reduce the incidence of disease in general by improving the physique and stamina of our flocks, good management alone can never succeed in entirely eradicating disease. In England and America, where the standard of management is comparatively high, poultry diseases are actually on the increase instead of on the wane. To what extent this is due to the increased virulence of the pathogenic organisms involved or to defects in modern systems of breeding cannot be stated with certainty—both factors are probably involved. One thing, however, which is certain is that, so far as the farmer is concerned, the problem of poultry disease must be tackled in Malaya along the same broad lines as in England. He must learn to segregate all new birds for a suitable period after their arrival on the farm; to isolate and preferably to kill immediately all birds which shew the symptoms of serious disease; to keep his buildings and foodstuffs clean; and to prevent his ground from becoming foul, either by the rotation of his land or, if the birds are kept intensively, by keeping them off the ground altogether. In addition to encouraging sounder methods of prevention along these lines, research has just been begun by the Veterinary Department into the organisms involved in local outbreaks of disease. It is at present impossible to make any definite statement, but there are indications at least that either fowl pox and Newcastle disease, or local diseases closely resembling these two, are present in the country. Among minor complaints, colds, diarrhoea, crop-binding, intestinal worms and external parasites such as mites are very common. The nature and control of these maladies in Malaya are similar to those elsewhere, and call for no comment in this place.

Other Forms of Poultry.

Little can be said concerning other forms of poultry such as ducks, geese, turkeys and pigeons. Attention has already been drawn to the fact that, while

ducks are plentiful in Malaya, the other kinds are comparatively rare. Ducks abound in certain areas where irrigated rice is cultivated by Malays, and they can play quite a useful part in the control of various insect pests of that crop such as *Scotinophora coarctata*; but it is among the Chinese that the better birds are to be found. The duck is valued by the Chinese for its flesh, and by all Asiatics for its eggs which form practically a *sine qua non* in a good curry. Moreover, it is a much hardier bird than the hen, and losses by disease are nothing like so serious. There are possibilities in Malaya for extending the production of duck eggs, but the position as regards table ducks is not clear. Among pure breeds which have occasionally been imported for trial, the Khaki Campbell and the Indian Runner are alone worth mention. Good specimens of locally bred geese and turkeys are also sometimes seen, but they are at present of little economic importance. With turkeys on free range, liability to disease constitutes a serious limiting factor.

Marketing.

With the exception of a small amount of dressed poultry which is imported in cold storage, table birds in Malaya are invariably sold alive to the consumer. The owner either takes his surplus birds in baskets to the local fair or market, where he may sell them direct to the consumer or dispose of them through a dealer, or he sells at his house to Chinese higglers who complete the marketing process. There is no attempt at grading other than by weight and external appearance. A certain amount of cramming is practised, but it is not very effective.

Eggs are disposed of mainly through the same channels, but there is some attempt at group collection among Chinese squatters in the neighbourhood of towns, while co-operative collection and sale is practised among Malays in Krian, the eggs being graded and sold mainly in Kuala Lumpur, Ipoh and Penang. Where large numbers of eggs are to be transported, they are packed either in open baskets or in boxes or barrels full of *padi* husk. In the former method, 120 eggs are called 100 to allow for breakages and theft *en route*, while in the second method breakages average only 1 to 2 per cent. Eggs sold in the market are seldom guaranteed, although bad eggs are usually replaced to regular customers after a certain amount of argument, and purely as a concession.

The Krian co-operative system of marketing is worth description. The members of the society bring their eggs daily to the collecting depôt where they are candled, eggs with blemishes or large air-spaces being rejected and sold locally. Accepted eggs are stamped, packed in boxes with padi husk and railed to the principal market towns where they are sold under guarantee by agents. The Society handles 25,000 eggs a month and claims that members gain an extra income over the whole year by selling their eggs in this manner.

Poultry Shows.

Small poultry shows have been held in Malaya for a comparatively large number of years. The earlier efforts tended to be purely local in organisation; they were supported mainly by Europeans, and they had no real influence on the poultry of the country as a whole, particularly as the exhibition type of bird was inclined to predominate. With the formation of the Malayan Agri-Horticultural Association in 1922, however, poultry sections were designed to bring in a much wider range of exhibits and exhibitors, and the purely local societies gradually disappeared and were replaced by District Agricultural Shows.

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THE CONTROL AND ORGANISATION OF FRUIT CANNING IN THE UNITED KINGDOM

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Factory Lay-out.

As stated in a previous article on fruit canning * the lay-out of the factory is of great importance. For registration under the National Mark Scheme canneries are required to comply with very rigid standards, and as these are of considerable interest in view of the Malayan position they are reproduced below.

The following requirements must be complied with by authorised canners :

Minimum Technical Requirements.

(*a*) *Buildings.*

All buildings including floors must be clean and capable of permitting hygienic production.

(*b*) *Equipment.*

(1) Must be designed to give the maximum technical efficiency.

(2) Syrups : (i) Hand syruping by dipping is not allowed; (ii) syrup strength must be controlled by means of hydrometers.

(3) Exhaust : An exhaust process is compulsory.

(4) Headspace : (i) Headspace must be controlled by tilting of the can after the syrup has been added, or by "plunging" or "ramp" after the exhaust process. (ii) Vacuum and headspace control must be practised.

(5) Seaming : Seaming machine must at least be semi-automatic.

(6) Cooking : Retort cooking for vegetables is compulsory.

Factory Conditions.

In addition to the statutory conditions of the Factory and Workshops Act 1901 and of the Welfare Order for the preserved fruit industry (S.R. & O. 1136 1919), the following requirements must be observed :

(*a*) All working floors to be washed or hosed daily with water and disinfectant.

(*b*) All working parts of machinery liable to contact with fruits, vegetables or syrups to be steamed or otherwise sterilized daily during packing operations. All grading tables and all fabric or rubber grading belts, etc. to be sterilized daily and removed and scrubbed once a week during canning operations.

(c) (i) All workers to wear clean overalls or armlets and aprons; (ii) the hair of women workers to be covered; (iii) the hands of workers to be washed after meals or absence from the packing tables; (iv) fruit not to be accepted in dirty containers. All containers other than

* The Canning of Fruit in the United Kingdom, by H. A. Tempany, *Malayan Agricultural Journal*, Vol. XXIII No. 5, 1935.

new ones supplied by the factory to be sterilized and marked in some effective manner before issue to growers.

Supervision of Canning Operations.

Adequate supervision is absolutely essential. As regards any factory where supervision is considered by them to be inadequate, the Ministry's officers are empowered to take the matter up with the canner concerned, and if this defect is not satisfactorily remedied a report is to be made to the Ministry for reference to the trade committee.

Quality Control Samples.

Samples of the finished product will be collected by the Ministry's officers at factories or at retail premises for analysis. For this purpose samples of an authorised canner's packs may be collected at his factories at an average rate of one sample in five thousand, but where the Ministry's officer is satisfied that it is not necessary to draw so many as regards any particular factory, he need not do so.

The National Mark System of Inspection of Canned Fruits.

The National Mark Scheme for the voluntary grading and marking of canned home grown fruit and vegetables came into operation in June, 1930. Its object is to develop the market for supplies of canned home-grown produce by a policy of standardisation, involving definition of standards of quality and the marketing of supplies in accordance therewith under the National Mark.

The Agricultural Produce Grading and Marking Acts, 1928 and 1931, enable the Ministry of Agriculture and Fisheries to make regulations prescribing grade designations and marks for any kind of produce, and provide that for any person selling an article to which a grade designation mark is applied, it shall be deemed to be a term of the contract of sale that the quality of the article agrees with the definition of quality applicable to the grade designation. The National Mark design consists of an outline map of England and Wales with a circle inset bearing the Union Jack and an inscription "Produce of England and Wales".

The design and words are registered under the Trade Marks Act and are also protected from abuse by the Agricultural Produce Grading and Marking Act. Only fruit and vegetables grown and canned in England and Wales may be packed under the National Mark Act.

The scheme is open to canners of fruit and vegetables grown in England and Wales; persons or firms desiring to apply the mark must apply to the Ministry of Agriculture and, provided applicants agree to comply with prescribed conditions and procedure and the Ministry is satisfied that the minimum technical requirements already described can be complied with, authority to apply the mark may be granted. A National Mark Committee, with powers to authorise firms or individuals to apply the mark and to revoke

or suspend such authorisation in the event of failure to comply with the conditions, has been appointed by the Minister of Agriculture, while a trade committee consisting of growers, canners and distributors, has also been appointed to advise the National Mark Committee in regard to the issue of authorisations to apply the National Mark and to advise the Minister on the general administration of the scheme.

An inspection service is maintained by the Ministry and the system seeks to ensure that (*a*) only home-grown produce is used; (*b*) that the standard of the quality of the raw product is maintained, and (*c*) that the requirements regarding the quality of the finished produce are complied with.

Authorised canners may apply the mark only to cans containing produce which they are satisfied conforms to the definition of quality prescribed.

Standardisation of containers is an essential feature of the scheme and dimensions have been fixed for the sizes of cans permitted thereunder.

Every can to which the National Mark is applied must bear a distinctive lid mark to be applied only by the authorised canners to fruit or vegetables canned by them. Canners are required to supply the Ministry with a list of the lid marks intended to be used by them.

Stocks of canned fruit or vegetables to which the National Mark has been or will be applied, must, so long as they remain on the premises of the canner, be stacked in such a manner that the cans packed on any particular day are segregated.

Authorised canners are required to keep records showing the quantity and source of every consignment of fruit or vegetables received and canned by them under the National Mark.

An authorised canner must allow any duly authorised officer of the Ministry to inspect his premises, equipment, stocks and records at any reasonable time, to take samples of fruit and vegetables going forward to be canned, to be present when National Mark fruit or vegetables are being canned, and to draw samples from National Mark canned fruit or vegetables stacked ready for sale.

It is stated that of the seventy-four factories at present engaged in canning fruit and vegetables in the United Kingdom 80 per cent. adhere to the National Mark scheme. The inspection service for canned fruit and vegetables comprises one Chief Inspector with two assistants. With this staff it is found practicable to visit every factory under the scheme once a fortnight.

In inspecting factories officers make a general tour of the factory and direct attention to any points that appear to require it; they draw samples of produce from stock and these are sent, with a label giving particulars concerning the time and conditions under which they were drawn, to the Fruit and Vegetable Canning Research Station at Campden. The samples are examined and reported on at Campden under the supervision of the Director, a trained staff being maintained for the purpose.

At present only one grade is prescribed under the National Mark; this is considered a disadvantage inasmuch as it tends to grade down the highest qualities of produce to one common standard; the question of establishing two standard grades for canned fruit and vegetables is, it is understood, under consideration. Before the Mark was introduced there were no standards for canned fruits and vegetables in England. The introduction of standards and the systematic inspection of the canned products have resulted in a steady improvement in the quality of the pack year by year.

The Scheme is stated to be working well and provides a possible basis for the introduction of a similar grading provision into the Malayan industry with modifications to suit local conditions.

Advertising and Trade Organisation in relation to the Trade in Canned Fruit.

Under the existing system of marketing, Malayan canned pineapples are purchased in bulk by importers who affix their own labels to the cans irrespective of the cannery from which the produce emanated. There are upwards of seventy different brands of Malayan canned pineapple on the market, although only sixteen factories exist; in this way the same brand may emanate from a number of different factories.

The only advertisement which the industry receives is the displays made by the Malayan Information Agency at Fruit Shows and Exhibitions, although certain firms which distribute canned goods include Malayan canned pineapples in their exhibits at the trade shows, such as The Grocers' Exhibition.

The Malayan Agency obtains produce for these displays from importing firms and by direct importation; it is remarkable, however, that although their efforts have undoubtedly increased sales they have so far received no financial assistance or support from the packers and very little from the distributors. The total sum which the Agency has available for these displays amounts to £150 to £200 per annum which, in view of the size of the trade, is very inadequate.

In the British canning industry, on the other hand, great insistence is laid on the product being packed and marketed under labels which show clearly the name of the organisation which is responsible for the manufacture. In some cases canneries are organised into groups for the purpose of marketing their produce under one brand, in others single factories market their produce under their own factory mark.

Furthermore, individual firms, group organisations and the Ministry of Agriculture annually expend large sums in display and advertisements.

At the various trade Fairs many of the organisations erect and stage exhibits, and representatives are in attendance for the purpose of supplying information to prospective customers. They also advertise extensively in the daily papers and trade journals and by means of public displays on hoardings.

In addition to this, the Ministry of Agriculture makes extensive displays in connexion with the National Mark scheme for canned fruit and vegetables, at trade shows and exhibitions, and undertakes publicity campaigns by means of direct advertising. The sum annually expended by the Ministry of Agriculture in this connexion is stated to amount to £10,000 per annum, while if to this is added expenditure by private agency, the total is very much greater.

It is at present considered by the import trade that display and advertising of Malayan canned pineapples is unnecessary as, owing to the cheap price at which the fruit is put on the market, it sells itself. The present writer ventures to doubt whether this is an entirely sound conclusion. The industry is in a position in which its profits are very small and it is faced with considerable competition. In order to retain its place in the market an improvement in methods of sale, greatly increased expenditure on advertising and display, and more wholehearted co-operation on the part of the producers and distributors in official efforts to advertise the product, combined with improvement in quality and method of production, are needed. These necessary improvements apply not only to England but to Canada. It is clear that considerable opportunities exist for extending the trade in canned pineapples in Canada provided adequate publicity can be secured.

Principal Activities of the National Food Canning Council.

The various interests concerned in the British canning industry are represented by the National Food Canning Council, the objects of which are as follows:—

1. To collect and collate information as to the treatment of various products; to organise investigations at home and abroad, and to advise as to the most suitable operations for various parts of Great Britain.
2. To secure the interest and activity of the Government and Parliament in this branch of agricultural development and in particular to advise as to the application of subsidies or other forms of financial assistance.
3. To interest growers and others in the establishment of local canning schemes.
4. To further such projects in every way possible, and in particular by the exchange of technical and scientific information and assistance.
5. To secure the highly necessary drafting and recognition of rules as to grading and other standards, and as to labels, marks, and other features.
6. To obtain the most favourable support of wholesale and retail grocers and other distributors.
7. Through the press and other forms of publicity to educate the public to medical and other recommendations of canned produce.
8. To secure the cheap and plentiful supply of standard cans.
9. To assist the industry in respect of railway and other transport facilities.
10. To encourage the manufacture of specialised and improved machinery and appliances in Great Britain.
11. To promote the development of an export trade for our agricultural produce by participation in the world market for canned food.

12. To act as a common centre of advice and help for tin-plate manufacturers, can makers, machinery makers, canners, growers, bankers, distributors, and the public, in the establishment and expansion of a serviceable and flourishing canning industry which will provide for the community throughout the year at reasonable prices a greater variety of healthful fish, fruits, and vegetables, and other foods in the most hygienic and convenient form.

When the highly organised position of the British industry in respect of marketing, advertisement and representation is contrasted with that of the Malayan industry the difference is so striking as to call for no further comment.

FALLOW CROPS ON PADI LAND IN PROVINCE WELLESLEY

BY
J. A. Baker,
Agricultural Officer.

It has often been remarked that the system, general in Malaya, by which padi land is allowed to lie fallow during a considerable part of the year, is wasteful, but doubts have been expressed as to whether the land can be satisfactorily cropped during this period, and as to the effect of such a practice on the yields of padi in the following season.

The trials described in this note were undertaken with the intention of elucidating these points. It is necessary to emphasize that the inferences drawn are relevant to the conditions prevailing over large areas of Province Wellesley, but they cannot be regarded as generally true for other localities. Briefly, these conditions are as follows :—

(a) A reasonably predictable rainfall during the off-season with small probability of long periods of severe drought or excessive flooding.

(*b*) Adequate drainage facilities.

(*c*) A sufficiently long off-season to provide some latitude in the matter of planting dates if conditions are not suitable immediately after harvest.

It should further be added that the trials were conducted on the shallow type of rice field suited to medium term padi varieties.

1932 Trials.

In 1932 three-quarters of an acre were planted with vegetables. Unfortunately, this line of work was not decided upon until rather late in the season and planting could not be commenced before May 3rd, so that the land had to be cleared for padi before most of the vegetables were fully mature. Long beans, however, were harvested and gave a satisfactory crop. Ladies' fingers, soya beans and groundnuts made good vegetative growth but chillies were backward.

Trials in 1933.

In 1933, in addition to vegetables two varieties of tobacco were included (Kedah and Thattayan). All crops were sown in March.

Long beans, cucumbers, brinjals, ladies' fingers and chillies made satisfactory growth, but yields were low. Groundnuts and sweet potatoes gave negligible crops and great difficulty was experienced in harvesting these varieties owing to the hardness of the soil. It is to be noted, however, that on light padi

soils, such as those at Tasek Junjong (Province Wellesley South) sweet potatoes have been successfully grown as fallow crops by padi cultivators. Loofah also proved a complete failure owing to periodical flooding which apparently affects this crop adversely. Tomatoes for the most part succumbed to wilt disease.

Tobacco of the Kedah type made satisfactory progress, but yielded at the rate of only 3 cwt. dry leaf per acre—a low yield probably due to waterlogging of the land during the growing period. The Thattayan type never really recovered from the initial setback caused by flooding; the plants remained small in size and unhealthy in appearance, so that this variety would seem to be unsuited to the rather unusual conditions of the trial.

Trials in 1934.

As a direct result of the experience of the previous two seasons the following changes were made in planting the 1934 crop :—

(*a*) In place of the ordinary broad beds, about 1 foot high, the land was thrown up into ridges 2 feet high.

(*b*) All crops received a dressing of buffalo pen manure at the rate of 3 tons per acre.

Results obtained were as follows :—

Variety	No. of Plants	Date Sown 1934	Date of final Plucking 1934	Maturation Period	Yield (in lbs.)
Long beans ...	128	May 16th	July 17th	63 days	43
Ladies' fingers ...	128	April 14th	August 8th	121 days	92
Ladies' fingers ...	128	May 14th	August 28th	106 days	39
Chillies ...	256	March 12th	August 28th	170 days	55

The yields showed an improvement as compared with those of the previous year, but remained low. As in the preceding season, loofah and bitter cucumber proved complete failures and yields from groundnuts were negligible; cucumbers also failed. Tobacco made very satisfactory growth and it is greatly to be regretted that the crop could not be brought to maturity before it became necessary to prepare the land for the next season's padi.

Effect of Fallow Crops on Yields of Padi.

The view has been expressed by Malays in Province Wellesley and elsewhere that the cultivation of vegetables between padi crops is objectionable in so far as it reduces the yields of padi. On the land available at Bukit Merah

it has not been possible to lay down a statistically conclusive experiment to settle this point, but during 1933 and 1934, the area which had been fallow-cropped for two successive seasons, without manure other than a very small amount of wood ash, was laid out as an experiment which had been duplicated in somewhat modified form on an adjoining piece of land not previously cropped with vegetables. In each case the same variety of padi (Seraup 36) was used and accurate records of plot yields were taken at harvesting. The results obtained were as follows :—

	Mean Yield of Padi per Plot in lbs.	Size of Plot.	Yield in lbs. per acre.
Area cropped with vegetables ...	23.75	1/160th acre	3,800
Area not so cropped ...	23.6	1/120th acre	2,832

Though the matter cannot yet be placed beyond dispute it would appear that no serious reduction in yield of padi may be expected to follow two seasons' fallow cropping with vegetables.

Conclusions.

The work that has so far been carried out points to the conclusion that though many food crops will make satisfactory growth when planted on padi land during the off-season, yields are likely to be low, and not of the order expected under market garden conditions, though greatly increased yields could no doubt be obtained by more intensive cultivation and manuring (such as practised by the Chinese in Malacca).

2. Results obtained with tobacco are sufficiently promising to make further work with this crop desirable though its relatively long maturation period would limit the number of localities in which it could successfully be cultivated during the fallow season.

3. The observations so far made have not revealed any reduction in yields of padi as a result of two seasons' fallow cropping.

THE MALAYAN VEGETABLE-OIL INDUSTRY 1934

BY
D. H. GRIST,
Agricultural Economist.

The Malayan vegetable-oil industry, which includes the various raw materials from which such oils are obtained, the oils and the by-products, falls naturally into two categories, *viz*: products of which exports exceed imports, indicating an extensive local production; and crops of which imports exceed exports. In the first category only coconut and oil palm products are of any importance.

Coconuts.

Prices.—Local prices of coconut products during 1934 were the lowest on record. The lowest price quoted in Singapore for the "sun-dried" quality for copra was $2.55 per picul on 5th April, and the highest price for the year on 31st December when it was quoted at $3.30 per picul. The average price for the year was $2.94 per picul, as compared with $3.89 per picul in the previous year. The average price of the "mixed" quality was 50 cents per picul lower than the "sun-dried".

On average London prices for the year, Ceylon obtained a premium over "Straits" copra of over 14 shillings per ton, and a premium over Java copra of 12 shillings per ton. On the other hand, Straits copra commanded a premium of 5s. 9d. over Philippine copra and 5s. 11d. over South Seas copra.

COCONUT OIL.—The average price for the year in Singapore was $5.96 per picul as compared with $7.70 per picul in 1933.

"POONAC" (coconut cake).—The average wholesale price in 1934 was $1.28 per picul. During the first half of the year the price was around $1 per picul; thereafter it appreciated, until in December it was quoted at $1.70 per picul.

Production and Exports.—Despite the low market price ruling for coconut products in 1934, the total volume of the Malayan export trade was well maintained, being but 1½ per cent. less than the record figures attained in 1933. The nut equivalent of the net exports of coconut products was 695,142,000 while in 1933 it amounted to 704,714,000 nuts.

No means are available for estimating, with any reasonable degree of accuracy, the total production of coconut products in Malaya. By reason of the lower purchasing power of the Malays, the manufacture of coconut oil in the homestead was definitely more popular during the year, and it is probable that the actual production of coconut products in 1934 was fully equal to that of the previous year.

COPRA.—The net exports of copra were 95,599 tons, valued at $5,864,692, as compared with 110,298 tons, valued at $8,989,098 in 1933. The imports

into Malaya amounted to 94,634 tons valued at $4,115,438. This is a decrease in quantity of over 5,000 tons as compared with the year 1933. The Netherlands Indies supplied 85,131 tons (or 90 per cent.) of the imports, the remainder being derived within the Empire. The gross exports of copra were 190,233 tons of which 129,888 tons (68 per cent.) were consigned to the Continent of Europe, 52,385 tons (27.5 per cent.) to the United Kingdom, and only 2,506 tons (1.3 per cent.) to the United States of America. In the previous year 66 per cent. of the exports were consigned to the Continent of Europe, 23.5 per cent. to the United Kingdom and 8 per cent. (or 17,618 tons) to the United States of America. The fall in exports to the last-named country is accounted for by the imposition of a very high processing tax in the United States.

Fresh Coconuts.—The net exports of fresh coconuts were 10,080,400 nuts as compared with 10,370,600 nuts in the previous year. The import of nuts into Malaya is negligible. The fresh, husked nuts are derived mainly from South Kedah, Penang and Province Wellesley and are shipped mainly to Burma.

Coconut Oil.—Since the year 1929, the net exports of coconut oil have shewn a progressive increase. The 1933 net exports at 17,582 tons were 5,633 tons in excess of the year 1932. The net exports during the year 1934 were 25,485 tons, valued at $2,322,358. The imports into Malaya were only 313 tons.

Shipments were made to a number of countries, mostly in Asia, *e.g.* the Netherlands Indies 5,448 tons, British India 4,672 tons, China 2,941 tons, Egypt 2,465 tons, Burma 2,338 tons, Hong Kong 989 tons, Siam 689 tons, while the United Kingdom took 3,758 tons and the Continent of Europe 1,555 tons. This trade is worthy of every possible encouragement as providing outlets for Malayan produce which are of particular value while the market for copra is so unfavourable and uncertain.

The net export from Malaya of oil cakes (most of which is probably coconut oil cake, "poonac") was the highest on record and reflects the increase in coconut oil production. The net exports in 1934 were 11,273 tons, valued at $323,511 as compared with 9,993 tons, valued at $269,985 in 1933 and 2,773 tons, valued at $84,777 in 1932.

Areas.—The last coconut census was taken in 1930. The present figures are based on that year with such amendments as have been reported from time to time. The total area is estimated to be 610,696 acres, of which 242,758 acres are in the Federated Malay States, 83,400 acres in the Straits Settlements and 284,538 acres in the Unfederated Malay States. Of this total, 489,882 acres, or 80 per cent. are contained on holdings of less than 100 acres each—in most cases of areas of less than 10 acres each. There are 62 estates of over 100 acres each, with a total planted acreage of 120,814 acres.

Table I.

Estimated Planted Area of Coconuts at end of 1934.

State or Territory	On holdings 100 acres or over	On holdings of under 100 acres	Total
Perak ...	49,464	59,800	109,264
Selangor ...	37,827	72,539	110,366
Negri Sembilan ...	1,069	4,897	5,966
Pahang ...	2,712	14,450	17,162
Total F.M.S. ...	91,072	151,686	242,758
Singapore ...	3,159	5,241	8,400
Malacca ...	—	13,228	13,228
Dindings ...	2,657	3,933	6,530
Province Wellesley ...	17,598	19,223	36,821
Penang ...	2,175	11,375	13,550
Labuan ...	—	3,422	3,422
Brunei ...	—	1,370	1,370
Christmas Island ...	—	19	19
Total S.S. ...	25,589	57,811	83,400
Johore ...	3,300	166,067	169,367
Kedah ...	853	28,218	29,071
Perlis ...	—	3,829	3,829
Kelantan ...	—	57,271	57,271
Trengganu ...	—	25,000	25,000
Total U.M.S. ...	4,153	280,385	284,538
Total Malaya ...	120,814	489,882	610,696

Oil Palms.

Prices.—Palm Oil. The average price per ton of Malayan palm oil in bulk c.i.f. Liverpool, on a basis of 18 per cent. free fatty acids for the year 1934 was £12.9.3, as compared with an average price of £16.0.3 in 1933. The average c.i.f. New York/Philadelphia price in 1934 was 2.45 cents gold per lb. The average price in January 1934 was £14.6.8 on a falling market, the price declining steadily until in June an average price of £8.18.9 per ton was reached. Thereafter the price appreciated, until at the end of the year a price of £16 per ton was reached.

Palm Kernels. The average price per ton of Malayan palm kernels, fair average quality, c.i.f. landed weight on the Continent, in respect of the year 1934 was £6.12.8. The corresponding price in 1933 was £8.8.6 per ton.

Production.—The following table shews the actual Malayan production of palm oil and kernels in Malaya, as declared by estates.

Table 2.

Malayan Production of Palm Oil and Kernels 1934.

State	Palm Oil	Palm Kernels
	tons	tons
Perak ...	5,378.1	740.0
Selangor ...	7,362.5	1,253.5
Negri Sembilan ...	192.5	19.9
Pahang ...	31.5	nil
Johore ...	4,510.5	794.9
Total Malaya ...	17,475.1	2,808.3

In the year 1933, the production of palm oil was 12,998 tons and of palm kernels 2,298 tons.

Exports.—The imports into Malaya of palm oil in 1934 amounted to 127 tons, valued at $13,328, exports were 15,979 tons valued at $1,378,475; net exports were therefore 15,852 tons, valued at $1,365,147, as compared with 12,100 tons in 1933, valued at $1,363,532. Of the 1934 exports, 7,640 tons were consigned to the United Kingdom, and 5,727 tons to British Possessions and Protectorates.

The net exports of palm kernels in 1934 were 3,196 tons, valued at $167,549, imports into Malaya being negligible. Of these exports, 2,107 tons were consigned to the Continent of Europe and 1,023 tons to the United Kingdom. In the previous year, the net exports of kernels were 2,019 tons, valued at $150,871.

The peak production month in each of the last three years was August, while a smaller peak month in each year occurs in March. May and June are the months of lowest production.

Areas.—At the end of 1934 there were thirty-three oil palm estates in Malaya, with a total planted area of 64,605 acres, and 44,883 acres of reserve land. During 1934, 1,080 acres were planted. Of the total planted area, 31,629 acres of palms, or about half of the total area, were planted up to the end of 1929, and can therefore be said to have reached the bearing stage, though not, of course, necessarily the stage of maximum production. The sizes of estates were as follows:—ten estates of over 2,000 acres planted, four estates of between 1,000 and 2,000 acres planted, nine estates of between 500 and 1,000 acres and ten estates of under 500. There are twenty-two factories for the preparation of palm oil and kernels, of which all but three are of the centrifugal type. The Central Experiment Station, Serdang, has both centrifugal and press machinery.

Imported Vegetable Oils.

Local consumption of edible oils is considerable. The following figures* include all the important products of this description in which imports exceed exports.

Table 3.

Net Imports of Vegetable-Oil Products 1934.

Products	Net Imports Tons	Value Net Imports $
Groundnuts ...	14,357	1,069,836
Groundnut oil ...	6,113	1,211,564
Soya beans ...	17,335	894,731
Gingelly ...	2,880	246,246
Gingelly oil ...	27	6,512
Castor oil ...	76	21,944

* Abstracted from Malayan Annual Summary of Monthly Returns of Foreign Imports, Exports and Shipping for the year ending 31st December, 1934.

Groundnuts and groundnut oil are chiefly used for culinary purposes, especially by the Chinese. Most of the nuts are imported from the Netherlands Indies, while the oil is imported from the Netherlands Indies (Java) and China in about equal quantities.

Net imports of groundnuts in 1933 were 11,739 tons, valued at $1,000,259. The 1934 net imports easily constitute a record, net imports in years previous to 1933 being from 5,000 to 8,000 tons annually. On the other hand, net imports of groundnut oil have decreased and in the year under review were the lowest on record, being 6,113 tons, as compared with 6,885 tons in 1933, 9,288 tons in 1932 and 13,291 tons in 1931.

The increased imports of groundnuts and the decreased imports of groundnut oil are ascribed to the effect of the tariff on these products. There has been an increased use of groundnuts in oil-crushing factories, especially in the Straits Settlements, due to the fact that whereas the Federated Malay States are subject to an import duty on groundnuts of 1½ cents per lb. full duty and ¾ cent preferential duty, and of 6 cents per lb. on groundnut oil and 3 cents preferential duty, there are no import duties in the Straits Settlements on either groundnuts or their oil. Crushers in the Straits Settlements are therefore able to purchase groundnuts from the cheapest source—usually outside the Empire—and to import the oil into the Federated Malay States as Empire production. Of the gross imports of groundnuts into Malaya in 1934, 4,040 tons were from British Possessions and 11,076 tons from foreign countries.

The known area of groundnuts in Malaya is 1,651 acres, of which 654 acres are in the Federated Malay States, 32 acres in the Straits Settlements and 965 acres in the Unfederated Malay States (595 acres in Johore and 350 acres in Kedah). Doubtless there are other areas, as the crop is frequently grown in small areas on newly-opened land, or in rotation with other crops, in market gardens.

Soya beans are imported in large quantities, entirely from China. They are used locally in the manufacture of sauces.

Gingelly is imported mainly from Java. Its oil is expressed locally by Indians who use it in cooking and for anointing the body.

It is to be noted that all the above-mentioned crops are derived from tropical regions, although for economic reasons, their cultivation in Malaya is not pursued on any considerable scale. Soya beans have occasionally been grown successfully in this country generally by Chinese market gardeners. Yields have, however, been exceedingly variable.

Balance of Trade in Vegetable-Oil Products.

In 1934, the value of the net exports of coconut and oil palm products was $9,909,938, as compared with $13,090,254 in 1933. The value of net imports of other vegetable-oil products in 1934 was $3,450,833 as compared with $3,548,039 in 1933. On balance, therefore, the value of exports exceeded those of imports by $6,459,105 in 1934 as compared with $9,542,215 in 1933.

Market prices in 1935 of vegetable oils shew a marked improvement on those of 1934. The imports and exports of these products for the first quarter 1935 are shewn in the following table and indicate a material recovery of these markets from the trade depression of 1934. The value of exports for the quarter exceeds that of imports by $2,592,460.

Table 4.

Value of Malayan Exports and Imports of Principal Vegetable-Oil Products.

(First Quarter, 1935).

Product	Value of Exports $	Value of Imports $
Coconut products ...	4,924,088	1,696,761
Oil palm products ...	438,613	4,414
Gingelly products ...	82,782	840,059
Soya beans ...	7,859	273,957
Gingelly products ...	7,642	53,333

Abstract.

TWENTY-FIRST REPORT ON NATIVE RUBBER CULTIVATION IN THE NETHERLANDS INDIES.*

Fourth Quarter 1934.

The exports of native rubber during the first two months of the quarter under review were small, attributable to the small production resulting from lower prices in the interior, whereas the accumulation of stocks, particularly in Bandjermasin, Palembang and Djambi, has also been of great significance. Part of these stocks was cleared in the second half of December in consequence of the legal regulation limiting stocks, which was made effective on December 16th, and to the fact that on the same date the extra export tax was reduced from 20 cents† to 16 cents per kgm.

As a result of the small amount exported in October and November, the excess of native exports over the quota was considerably reduced, and at the end of the year amounted to 8,593 tons†. The reduction of the export tax in December again stimulated production.

The changes which have been instituted in the conversion percentages of wet rubber to dry rubber were stated in the last report; in addition to these, the conversion percentage for wet rubber exported from Palembang was raised from 82½ to 85, as from 16th December.

The percentage of native rubber exported as dry rubber (blanket, smoked sheet and sheety crêpe) improved from 35½ in October to 44 in November, and 46½ in December. The exports of scrap and earth rubber declined slightly.

Propaganda for the production of native smoked sheet was continued and extended in the regions of Palembang, Djambi, Southern and Eastern Division of Borneo and the East Coast of Sumatra, under the leadership of experts especially appointed for the purpose.

Due to the increased production of dry rubber by the natives and the greater uniformity in the quality of wet rubber, it is now possible to give price data which are more valuable than the prices reported previously, which principally referred to qualities of wet rubber of which the washing loss percentage formed a somewhat uncertain factor. In the following table, the prices for the Western Division of Borneo, Banka, Tapanuli and Palembang have been included together with the respective prices for Java standard sheet in Batavia, less the extra export tax on dry native rubber (column 2) for comparative purposes.

The use of the special export tax for the advantage of the rubber producing natives has been extended. As the planning of the projects to be undertaken progressed, the number of demands for any funds available also increased. At the end of 1934 a total of 3.8 million guilders was made available. A number of the larger projects are now under way.

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* Abstracted from *The Netherlands Indies* Vol. III, No. 6, March 16, 1935.

† Throughout this Abstract, cents refer to guilder cents and tons to metric tons.

Prices of Native Rubber in guilders per 100 kilograms.

Date			Western division of Borneo			Bangka	Tapanoeli	Palembang	
			Pontianak	Singkawang	Bengkajang	Pangkalpinang	Sibolga	Palembang	
			slabs	sm. sh.	sm. sh.	sm. sh.	Sheety crepe No. 10	slabs	sm. sh.
Oct	3	23	9.30	14.10	17.80	16.20	10.50	9.60	—
,,	10	19½	8.10	11.50	11.35	13.75			
,,	17	21½	8.10	13.75	13.75	14.55			
,,	24	21¾	7.40	12.45	11.35	14.55		8.00	—
,,	31	20¾	6.90	12.15	—	12.95			
Nov.	7	18½	5.05	10.55	—	12.95	5.80	7.20	
,,	14	19¼	5.05	10.55	—	11.35			
,,	21	18	5.45	9.70	11.35	10.95		7.20	
,,	28	19		10.55	9.70	9.70			
Dec.	5	18½	6.70	8.90	8.25	9.05	10.90	7.20	14.40
,,	12	18	6.30	8.90	8.90	8.50			
,,	19	22¼	8.70	11.80	9.70	12.15		9.20	15.00
,,	26	—	8.30	12.15	11.35	14.15			

Local reports are concerned mainly with the quantity of rubber exported from each locality and prices obtained. The following are some of the main matters of interest. In December the first lot of native-smoked sheet appeared on the Palembang market. Up to the end of December, 706 rubber mangles had been shipped to the interior, some 600 of them in the month of December. Seventy hand mangles were imported into Djambi in the fourth quarter of 1934 as compared with 200 in the third quarter.

The tree census in Banka and Dependencies was completed in October. The number of trees was 13,636,360 of which 6,243,726 were tappable and 7,392,634 not tappable. About 10 per cent. of tappable trees had never been in production. The total number of plantation owners is 25,183, of whom 19,460 have 30 or more tappable trees.

The latter group comprises 2,367 Chinese and 17,093 native rubber planters. For practical reasons owners of less than 30 tappable rubber trees were not considered as producers for application of the individual restriction to be instituted; they will, however, be given an opportunity of forming combines, and may request a harvesting licence for these joint plantings, providing the total number then reaches more than 30 tappable trees. But this group consists of only 1,359 tree-owners with a total of 22,428 tappable trees, and is unimportant.

By decree of the Director of Internal Administration (Dir. B.B.) dated December 20, 1934 No. BR 8c/1/15 the export quota of the region of Banka and Dependencies for the first licensing period (January up to and including

March) of the restriction year 1935 was fixed at 254,148 kgms. of dry rubber. The basic production per tappable tree is 0.217 kgms.

The establishment of small factories for the manufacture of native smoked sheet was started in the Southern and Eastern Division of North Borneo. Several credits of about *f* 400 were granted for the installation of complete machinery. The number of these small factories which produce marketable smoked sheet from native latex is now considerably increasing.

According to the final figures of the tree census in the Free Region of the Residency of Rhio and Dependencies, the total number of rubber trees in this region is 13,022,908, of which 4,151,102 are tappable and already tapped, 3,598,910 tappable but never tapped, and 5,272,896 not tappable.

The basic production per tappable tapped tree is 0.771 kgm. An allotment of a quarter of this amount is allowed for trees tappable but not yet tapped.

The number of owners of tappable plantations was 8,956.

Additional information for January and February is given at the end of the Report.

The exports of native rubber totalled 9,790 and 17,156 tons during January and February respectively. Stocks held by recognised exporters at the end of December 1934 were 16,932 tons; they decreased to 13,554 tons at the end of January 1935 and 8,294 tons at the end of February.

Effective January 1, 1935, an individual restriction was introduced in Banka and Dependencies and the Free Area of Rhio. In Acheen and Dependencies, the Residency of Tapanoeli and Sumatra's East Coast (except Bengkalis), the individual restriction was introduced as from April 1, 1935.

The registration of the rubber trees in North Sumatra (Acheen and Dependencies, Tapanoeli and Sumatra's East Coast, except Bengkalis) gave the results shown in the following table.

Department	Number of Producers	Tappable Trees		Total number of Trees
		Tapped	Untapped	
Acheen and Dependencies ...	5,688	1,898,766	1,485,166	—
Tapanuli ...	43,885*	10,264,762	6,480,659	32,886,602
Sumatra's East Coast (Est. area) ...	39,771	13,830,000	6,530,000	32,219,003

* Excluding 12,222 owners of untappable trees.

For 1935 the regional quotas for these three regions have been fixed at 0.43, 5.59 and 3.38 per cent. respectively of the basic export quota of native rubber in 1935.

Except in Banka and Dependencies, an allotment of one quarter of the quota for the tappable trees is allowed for the trees tappable but never yet tapped.

The basic quota per tappable tapped tree is 0.23 kgm. per year for Banka and Dependencies, 0.77 kgm. for the Rhio free region, 0.32 kgm. for Acheen and Dependencies, 0.35 kgm. for Tapanoeli and 0.61 kgm. for Sumatra's East Coast excluding Bengkalis.

In conclusion, reference might be made here to the announcement of the Government in the meetings of the Volksraad of February 14 and 16, 1935, regarding the operation of rubber restriction during the first restriction year, a review of which has been given in *The Netherlands Indies* Vol. III, No. 4. It was there explained in a convincing manner that the advantages of restriction for the Netherlands Indies as a whole, as well as for the estates and native rubber producing districts more specifically, were clearly demonstrated shortly after the introduction of the restriction; that practice had shown that the special export tax on native rubber could be considered as an effective restriction measure; that the Government had had the native rubber production always sufficiently in hand; and that means were being sought to relieve as far as possible the undeniable grievances which will always remain attached to the export tax as a restriction measure.

Review.

Empire Fibres for Marine Cordage.

Imperial Institute, London. 11 pp. February, 1935.

This pamphlet is a brief report, fully supported by data, of tests of tarred and untarred cordage made from East African sisal. The Director of the Imperial Institute, in a covering letter summarises the report in question and the work of the Admiralty and the Institute which has led to the present conclusions. He states :—

> "The possibility of employing Empire fibres as substitutes for Manila hemp for the manufacture of marine cordage has been the subject of investigation by the Admiralty and the Imperial Institute for the past ten years, and the results of the trials hitherto completed have been published in the Institute's Bulletin. As an outcome of these trials the Admiralty have arranged for the partial adoption in the Service of ropes made of Empire fibres—Sisal from East Africa and Phormium fibre from New Zealand—in place of Manila ropes.
>
> In the present report an account is given of a further series of experiments which have been carried out by the Admiralty to investigate the effect of tarring on the durability of Sisal rope when exposed to the action of sea-water. A considerable amount of tarred cordage is employed for marine purposes and, as Manila hemp does not absorb the tar satisfactorily, such cordage is at present generally made of European hemp. The tests with Sisal have now shown that this fibre absorbs tar well and that the tarred rope is quite suitable for marine use.
>
> Ropes, three inches in circumference, were prepared from No. 1 East African Sisal, one batch being made in the ordinary way from untreated fibre and another from yarn which had been passed through a bath of Archangel tar. Both kinds of rope were exposed to the action of sea-water for periods of two, four, six and nine months, their breaking strain being determined at the end of each period. It was found that after exposure to the action of sea-water for nine months the untarred Sisal rope had lost 76 per cent. of its inital strength, whereas the strength of the tarred Sisal rope had fallen only 29 per cent.
>
> The tests have thus shown that the life of Sisal ropes when exposed to sea-water is enormously prolonged by tarring. The Admiralty are therefore considering the general adoption of tarred Sisal cordage in lieu of tarred European hemp cordage, and enquiries are being made as to the extent to which such substitution could be carried out.
>
> It is hoped that the new and extended use of Sisal indicated by this investigation will lead to an increased demand for this important Empire fibre."

Departmental.

MEETING OF THE AGRICULTURAL ADVISORY COMMITTEE.

A number of important subjects were discussed at the meeting of the Agricultural Advisory Committee held at the Department of Agriculture, Kuala Lumpur, on 16th April, 1935. The following is a resumé of the more important points dealt with.

Coconuts.—Further examination was made of the recommendations contained in the report of the Vegetable Oils Committee, and a review given of action already taken. In this connexion, the Committee dealt with a diversity of points, including the future of copra research in Malaya, hydrogenation of oils, blending of foreign with local copra, sale of coconuts to estate labourers, and other means of extending the market for coconut products. The improvement of Malayan copra and the likelihood of the improved product finding recognition on the market engaged the attention of the Committee, which recognised that there is need of a representative body of copra producers in order that the latter should be in a position to discuss the requirements of the industry with authority. Mr. Stanton gave details of the proposed coconut section of the United Planting Association of Malaya, which would be in a position to represent the industry. The following resolution was carried unanimously :—

> "The Agricultural Advisory Committee has considered the information that has been laid before its members concerning the prospects for the establishment of a super grade for Malayan copra.
>
> The Committee is of opinion that this information is of great importance and merits the most serious consideration of the industry.
>
> It recommends that the information should be laid before the industry and that the industry should, if possible, discuss at an early date the practicability of implementing proposals for the establishment of a super grade of copra".

Pineapples.—The Committee reviewed the progress made for the better organization of the Malayan pineapple industry. The Chairman informed the meeting that a Despatch had been sent to the Secretary of State to the effect that the Malayan Governments accept the offer of a grant from the Colonial Development Fund towards the scheme for research on canning, not exceeding £2,625, to be spread over three years and agree to divide the balance of expenditure to be met by Malayan Government in the ratio of 3 F.M.S., 12 Johore and 10 S.S. A request has been made for the recruitment of a suitable Research Chemist from England.

Rice Industry.—The Chairman reviewed the present position of the industry in Malaya, and the methods of improvement which are being actively pursued. The Committee was informed of the approval of the appointments

of an Assistant Chemist, Assistant Botanist and Assistant Entomologist as research officers on rice. The general programme of work suggested was approved.

Rubber.—Subjects discussed under this head included the work of Asiatic Rubber Instructors, mouldy rot disease, coagulants, Malayan rubber competition, and smoke houses for small-holders.

Poultry.—The proposals for the establishment of a Central Poultry Breeding Station to be attached to the School of Agriculture, Serdang, were discussed. The Committee was in agreement with the proposals.

Palm Oil.—The Committee reviewed recent progress of research work in the Department on this product.

Fruit.—The desirability of extending the work of the Department on fruit culture was discussed and the Committee passed a resolution expressing the view :—

> "That more extensive work on the improvement of fruit cultivation and the distribution of planting materials of improved varieties of fruit trees should be undertaken".

Laboratory Accommodation.—The Chairman informed the meeting that the proposal for the creation of new laboratory accommodation for the Department of Agriculture could not be provided by Government on the Estimates for 1935 owing to the financial position, but that provisional entry had been made in the P.W.D. Budget for 1936 for the erection of new mycological, entomological, soils and chemical laboratories. It was not yet known whether these proposals would be accepted by Government. A plan shewing the proposed lay-out of the buildings was tabled.

A resolution was adopted unanimously in which the Committee drew attention to the inadequacy of the existing accommodation and pointed out that the fullest benefit of the work undertaken by the Department could not be expected when scientific workers labour, as they do at present, under unsuitable conditions. It urged that favourable consideration be given to the present proposals, which are reasonable and opportune.

FROM THE DISTRICTS.

Compiled by the Chief Field Officer from Monthly Reports submitted by Field Officers.

May, 1935.

The Weather.

In Kedah the weather during May, usually a wet month, was normal. In Province Wellesley and all the inland portion of the Peninsula except the centre and south of Johore, the weather was hot and dry and the rainfall up to the 24th May was below average, being in some places markedly deficient. On the western coastal plain in the Panchang Bedina area of Kuala Selangor District less than 1 inch of rain was recorded. With this exception rainfall on the west coast in Perak, Selangor and Negri Sembilan was about the average, but southward in Malacca and Johore it was higher and in the Batu Pahat District was more than twice the normal figure. On the south coast of Johore and in Singapore Island it was also somewhat wetter than usual. On the east coast in Kelantan conditions were very abnormal, heavy evening storms causing a high precipitation. On the Pahang coast, however, the rainfall was normal, while on the east coast of Johore it was deficient.

Remarks on Crops.

Rubber.—The principal feature of the month has been the increase in the number of holdings left untapped in almost all parts of the country. Four causes for this increase were given by Field Officers. The first was the recent reduction in the number of coupons issued in conformity with the increased percentage of restriction. Two others were the prior occupation of peasant proprietors in padi planting and in collecting the early and fairly plentiful fruit harvest. The fourth cause was the sale of coupons; these could be disposed of for $13 to $14 per picul of export rights. The cost of production of unsmoked sheet, if hired labour is employed, is from $8 to $9 per picul. Prices for this sheet have ranged mostly between $20.50 and $22 per picul; consequently the sale of coupons was as profitable as tapping the trees, if the owner was unable or unwilling to do the work himself.

A cabinet for smoking rubber sheet from small holdings, to which reference was made on page 194 of the April number of this Journal, was erected and demonstrated at the Raub District Agricultural Show on May 6th. Another has been put up at the Central Experiment Station, Kota Bahru, Kelantan, for purposes of demonstration and as part of the Department exhibit at the State Agricultural Show to be held in June.

Padi.—Padi harvest was completed in Larut District of Perak and the coastal mukims of Pahang, but estimates of the crop are not yet available. It was also finished in the Sungei Manik area of Lower Perak District where the average crop is reported to have been of the order of 300 gantangs per acre, although in some localities yields of about 600 gantangs were obtained.

In the Panchang Bedina area harvest commenced and fair yields were anticipated except from an area of about 1,000 acres which for some reason had not even begun to flower. The State Agricultural Officer visited this area to investigate the cause of this condition which he found to be associated with the presence of very numerous stem borers in the padi plant of certain varieties, notably Radins.

Work on the preparation of land and sowing of nurseries commenced in Kedah, Krian, parts of Malacca and the Muar and Mersing Districts of Johore. Ploughing was begun in the North and Central Districts of Province Wellesley, but had to be stopped owing to lack of water. In the river mukims of Western and Southern Pahang transplanting was in progress, but was somewhat late because the first nurseries had been damaged by drought, while the weed growth in the fields was heavy owing to lack of water. In Kelantan the rain enabled the first ploughing for dry padi to be commenced much earlier than usual, but unless the weather becomes drier it will be difficult to put the land into a fit state for planting.

In Malacca 120.69 piculs of padi seed of nine pure strains were sold to growers in the Settlement. In order to make up a deficiency, 1,500 gantangs of seed padi were obtained for Muar District from selected cultivators in Malacca and 500 gantangs of Seraup 48 for Endau District of Johore from Perak. In the Krian District 725 gantangs of selected padi seed, mostly Seraup 48, were distributed and a further 1,100 gantangs of Radin 2 were made available for the riverine mukims of Lower Perak where last year's crop failed. From Kedah 100 gantangs of the variety Padi Chubai, resistant to brackish water, were supplied for planting in Kelantan, while 150 gantangs of locally grown seed, mostly Siam 29, were also distributed in that State.

The Government Rice Mill at Temerloh had to be closed down on May 23rd because supplies of grain were insufficient owing to local difficulties of transport rather than to lack of surplus stocks in the District. Further supplies are, however, gradually being obtained and the mill will be re-opened when sufficient of these have been accumulated.

Copra.—There was a further slight improvement in the price of copra, so that the revival of interest in its production was maintained. One new approved type of kiln commenced operations in Province Wellesley and another in Krian, while two were opened in Tioman Island off the east coast. The product of the Tioman kilns sold for satisfactory prices in Mersing.

There is stated to be a demand for supplies of fresh nuts and copra for the oil mill at Kuala Sungei Baru in Malacca.

Pineapples.—Heavy crops of fruit were harvested in Singapore Island and in the Kuala Langat District of Selangor. The Kundang factory in the latter District was working night and day. In Ulu Langat District some 450 acres of pineapples were also in bearing, the fruit being conveyed to the Klang factory. In Johore supplies were adequate to meet factory requirements.

Recent observations show that, with the present wide spacing of pineapples grown as a sole crop, soil erosion proceeds rapidly and causes heavy losses of top soil. It is evident that this matter requires early attention if the fertility of many of the areas now carrying pineapples is to be preserved.

Fruit.—The mid-year season for tree fruits commenced somewhat earlier and more uniformly than usual. There was a good crop of durians and mangosteens in most parts of the Peninsula, but the durian crop was only moderate in Malacca and small in Pahang. Rambutans were plentiful, except in the inland districts of Pahang, where the trees were flowering, and in Johore where the crop was ripening. In Kelantan the durian crop was much earlier than usual, but in Singapore Island tree fruits in general were not quite ripe. Other tree fruits were in season in some areas, such as pulasan, langsat, rambai, mata kuching, the mango group and chempedak. There were large transfers of fruit from the producing districts to all the principal towns. Prices for durians varied considerably according to quality and locality, from 3 cents each in the north to as much as 40 cents each in Pahang. Mangosteens sold at 10 to 15 cents a hundred in Province Wellesley and Krian, but elsewhere at 30 to 85 cents a hundred, while rambutans fetched 25 to 60 cents a hundred.

Tobacco.—Additional small scattered plots of tobacco were planted in Kedah and in Central Perak. Crops were harvested in Province Wellesley, where 20 piculs were sold, in Perak South and in Malacca. In Southern Perak the new supplies caused a marked fall in prices, which for first quality leaf were $40 to $60 per picul as compared with $50 to $80 in the previous month. Elsewhere prices showed little change.

Agricultural Stations and Padi Test Plots.

At the Pineapple Experiment Station in Singapore Island rambutan seedlings were successfully budded. It was also found that the propagation of rambutans and pulasan by the "etiolated shoot" method was much stimulated if the beds were shaded.

On that part of the Central Experiment Station in Kelantan allotted to dry land plants a number of permanent crops were planted. Ploughing was commenced in the dry padi area. At the Telok Datoh Station in Selangor lalang eradication was finished and a mixed cover of *Calopogonium mucunoides* and *Centrosema pubescens* was sown with a dressing of 1 cwt of basic slag per acre.

The padi harvest was completed at the Kilanas Station and almost finished on the Lumapas Test Plot in Brunei.

Work on preparation of the land and sowing nurseries for the coming season was commenced on the Pekan, Dong and Lipis Padi Test Plots in Pahang, the Kendong Plot in Negri Sembilan, Titi Serong Station and the Kuala Kurau Plot in Krian, and the Telok Chengai Station and all Test Plots in Kedah. At the Temerloh Plot in Pahang transplanting was commenced.

Agricultural Shows and District Padi Competitions.

A district padi competition was held at Balik Pulau, Penang on May 19th. There were 47 exhibits, all of good quality. Mukim padi competitions were held in Ulu Selangor District in preparation for the District Show which is to take place early in June.

On May 6th a successful District Agricultural Show was held at Raub in Pahang at which the twelve best padi exhibits from four mukim competitions were judged. A short account of this Show appears elsewhere in this number.

Three mukim padi competitions were held in Lipis District and two in Temerloh District during the month. In the former District there were in all 223 entries of which most were not quite up to the standard required owing to the presence of mixed varieties of grain, or of red grain. In the latter District there were 559 exhibits; the competitions were well attended in both mukims and roused much interest.

In Negri Sembilan mukim competitions in Kuala Pilah District completed the State competitions for the season. The total number of exhibits in the State was 1,168 or about half the number judged in 1934, but the quality showed considerable improvement.

In Malacca a successful District Agricultural Show was held at Jasin on May 7th and the Central District padi competition took place on May 11th.

Rural Lecture Caravan.

The tour of the Caravan in Krian District which commenced on April 25th terminated on May 2nd and proved quite successful. On May 23rd a tour was begun in Penang and Province Wellesley which attracted large audiences at the four centres that had been visited by the end of the month.

Fish.

The Director of Fisheries supplied from Singapore 100 carp fry in a sealed container for stocking a pond owned by the headman of the mukim of Panji in Kelantan. These arrived safely, only two having died on the journey. The special method of packing these fry developed by the Department of Fisheries has proved very successful on previous occasions.

As a result of the assistance given by the Fisheries Department in preparing ponds and obtaining fry, the rearing of carp and also of local fish is attracting the attention of Malays in several parts of the country, whereas in the past carp rearing has been conducted entirely by Chinese. For feeding carp a supply of guinea grass is useful and owners of ponds are encouraged by the staff of the Department of Agriculture to establish plots of this grass.

It is of interest to record that trout fry have arrived at Cameron Highlands and are being reared by the Director of Fisheries in a special trough supplied with running water.

DEPARTMENTAL NOTES.

Visits of the Adviser on Agriculture.

The Adviser on Agriculture visited Negri Sembilan on May 15th and 16th, inspected the Agricultural and Test Stations in that State and discussed various matters with the State Agricultural Officer.

He visited Singapore and Johore from 21st to 24th May. On the 22nd he visited the new pineapple factory of Lee Pineapple Company in Johore as well as other factories and cultivated areas. In the evening he delivered a lecture, illustrated with lantern slides, in the hall of the Raffles Institution, to the pineapple trade, on *The British Fruit Canning Industry.*

The Adviser attended to several interviews on the 23rd and also presided at a joint meeting of the Pineapple Advisory Committees of Singapore, Johore and Selangor.

Lecture on the British Fruit Canning Industry.

On Wednesday May 22nd the Adviser on Agriculture, Dr. H. A. Tempany, C.B.E., delivered a lecture on *The British Fruit Canning Industry,* to a meeting of officials and representatives of the packing and exporting branches of the Malayan canned pineapple trade in the hall of the Raffles Institution at 8 p.m.

The Chair was taken by Mr. J. Innes Miller, M.C.S., Registrar-General of Statistics and Registrar of Factories and Marks under the Pineapple Industry Ordinance; among those present were the Hon'ble Sir A. Caldecott, M.C.S., C.M.G., C.B.E., Colonial Secretary, and the Hon'ble Mr. W. E. Pepys, General Adviser, Johore, together with other officials, representatives of the Chamber of Commerce, the Chinese Chamber of Commerce, the Pineapple Packers' Association, the Pineapple Growers' Association, and a number of gentlemen representing packing and export firms.

In the course of his lecture, which was illustrated by lantern slides, Dr. Tempany described and discussed the position of the English canning industry with special reference to the pineapple industry in Malaya, indicating certain directions in which improvements in the Malayan industry were needed to bring it up to date.

The lecture which was closely followed by all present concluded with a vote of thanks to the lecturer.

Leave.

Mr. J. N. Milsum, Senior Assistant Agriculturist, has been granted 9 months and 20 days' full-pay leave from 16th May, 1935 to 6th March, 1936.

Mr. F. Birkinshaw, State Agricultural Officer, Perak, has been granted 8 months and 4 days' full-pay leave from 3rd May, 1935 to 6th January, 1936.

Statistical.

MARKET PRICES.

May, 1935.

Rubber:—There was a slight improvement in the rubber market during May, the price in Singapore once more passing 20 cents per lb. Spot loose opened at 19⅛ cents per lb., and, after falling to 18¾ cents, rose in the second half of the month to 20⅞ cents, but closed at 19⅞ cents. The Singapore average price for the month for No. 1. X. Rubber Smoked Sheet was 19.59 cents per lb. as compared with 18.91 cents in April. The average price in London for the month was 5.84 pence per lb., and in New York 11.96 cents gold per lb., as compared with 5.70 pence and 11.47 cents gold in April.

Prices paid for small-holders' rubber at three centres during the month are shewn in the following table.

Table I.
Weekly Prices Paid By Local Dealers for Small-Holders' Rubber, May, 1935.

(Dollars per Picul.)

Grades.	Kuala Pilah, Negri Sembilan.					Kuala Kangsar, Perak.				Batu Pahat, Johore.		
	2	9	16	23	30	1	15	22	29	1	8	15
Smoked sheet	23.13	22.51			24.70	22.50	22.49	23.90			20.67	22.75
Unsmoked sheet	21.00	21.21	21.39	21.74	22.00	20.00	21.00		22.50	19.00	20.00	21.50
Scrap	16.00											

Transport by lorry Kuala Pilah to Seremban 15 cents per picul, to Malacca excluding duty, 25 cents per picul, by rail Seremban to Penang $1.24 per picul, Seremban to Singapore $8.00 per ton.

Transport from Batu Pahat to Singapore by lorry excluding duty, 90 cents per picul.

Transport from Kuala Kangsar to Prai by railway $6.20 per ton.

Transport from Kuala Kangsar to Singapore by railway $10.00 per ton (minimum consignment 5 tons).

At Kuala Pilah the standard deduction for moisture in unsmoked sheet is 5 per cent.

At Kuala Kangsar the standard deduction for moisture in unsmoked sheet is 10 per cent

No purchases at Kuala Kangsar on 8th May and at Batu Pahat on the 22nd and 29th May 1935.

Palm Oil.—Prices improved during the month, and the following table shews the movement of the market for the Malayan commodities.

Table II.

Prices of Palm Oil and Palm Kernels.

Date 1935.	Palm Oil in Bulk, c i.f landed weight Liverpool/ Halifax.	Palm Kernels, c.i.f. landed weight London/ Continent
	per ton	per ton
May 3	£ 20. 10. 0	£ 9. 5. 0
,, 10	22. 0. 0	9. 10. 0
,, 17	22. 0. 0	9. 5. 0
,, 24	22. 0. 0	9. 0. 0

Copra.—The market continued to improve steadily in the first half of the month but weakened at the close. The sun-dried grade opened in Singapore at $4.90 per picul, rose to $5.05, and closed at $4.70, the average for the month being $4.87 per picul as compared with $4.57 in April. The mixed quality averaged $4.53 per picul as against $4.32 in the previous month.

Copra cake improved from $1.15 to $1.25, averaging $1.23 for the month.

Rice.—The average wholesale prices of rice per picul in Singapore during April were as follows:—Siam No. 2 (ordinary) $3.97, Rangoon No. 1 $3.41, Saigon No. 1 $3.87, as compared with $3.77, $3.43 and $3.55 in March. Corresponding prices in April 1934 were $2.54, $2.35 and $2.57.

The average retail market prices in cents per gantang of No. 2 Siam rice in April were:—Singapore 28, Penang 20, Malacca 26, as compared with 27, 20 and 24 respectively in March.

Padi.—Prices per gantang ranged from 5 to 14 cents in different parts of the country. The Government Rice Mill, Bagan Serai, paid $1.90 per picul for padi, and the privately owned mill at Parit Buntar was reported to be paying $2.25.

Tea.—Consignments of tea from four Malayan estates were sold on the London market during May. The highland tea sold at prices ranging from 11d. to 1s. 0½d. per lb. and the lowland tea averaged 10½d. and 10¾d. per lb.

Average London prices per lb. paid during May for tea consignments from other countries were as follows:—Ceylon 1s. 3.53d., Java 10,17d., Indian

Northern 11.86d., Indian Southern 1s. 1.90d., Sumatra 9.02d. The latest London prices available are for the 23rd May and the above averages are accordingly up to that date only.

The following are the latest Colombo average prices available and are quoted from the *Weekly Tea Market Report*, 28th May, 1935, of the Colombo Brokers' Association; prices are in rupee cents per lb.: High Grown Teas 65 cents, Medium Grown Teas 58 cents, Low Grown Teas 54 cents.

Tuba Root (*Derris*).—Supplies of good quality roots sold on a basis of rotenone content were still scarce in Singapore in May, and the price advanced to $53 per picul, as compared with $50 in April. Roots sold on a basis of ether extract also advanced in price to $42 per picul as compared with $40 in the previous month. Non-Malayan roots continued at $32 per picul.

Coffee.—Prices in Singapore were considerably lower in May. Sourabaya coffee opened at $15 to $16 per picul, but fell throughout the month to close at $14 to $15. Palembang coffee averaged $11.25 per picul as compared with $11.19 in April.

Local prices for coffee continued low, falling to $18 per picul in Perak Central, but in Johore the price rose to $32.

Arecanuts.—Singapore average prices per picul during May were:—Splits $3.71 to $5.39, Sliced $6.25 to $8.35, Red Whole $5.20 to $6.35, Kelantan $5.50 to $5.67, the price in each range depending upon quality.

The average prices per picul quoted by the Singapore Chamber of Commerce were:—Best $5.65, Medium $5.07, Mixed $4.54.

Gambier.—The price of Block improved during May, being quoted at $6 per picul as compared with $5 per picul during April. No. 1 Cube weakened 50 cents, being quoted at $10.50 per picul as compared with $11 in the previous month.

Pineapples.—Prices in Singapore per case remain fixed by the Packers' Combine as follows:—Cubes $3.25, Sliced Flat $3.15, Sliced Tall $3.40.

Prices for fresh fruit fell during May; they were:—Singapore, $1.70 per 100 for large and $1.30 for small fruits; Johore, 1st quality $1.50 to $2.50, 2nd quality $1 to $1.80, 3rd quality 50 cents to $1.30; Selangor, 70 cents to $1.50 according to quality.

Tapioca. Prices per picul in Singapore remained unchanged during May and were: Flake Fair $4, Seed Pearl $5.40, Medium Pearl $6.

Sago.—Pearl, Small Fair improved again during May, averaging $3.93 per picul as compared with $3.74 in April. Flour, Sarawak Fair weakened further to average $2.24 per picul as compared with $2.30 in the previous month.

Mace.—Siouw weakened during May, the average price in Singapore being $93.25 per picul as against $98.75 in April, while Amboina improved, to average $61.25 per picul as compared with the previous month's average of $58.50

Nutmegs:—There was an improvement in May of $1 per picul in the Singapore average prices of both grades of nutmegs, 110's averaging $28.50 and 80's $29.50 per picul.

Pepper.—With the exception of slight buying enquiry from Australia the the market was stagnant and prices were further marked down during May. Average Singapore prices per picul were: Singapore Black $12.44, Singapore White $23, Muntok White $24, as compared with $13.75, $26.50 and $27.50 respectively in April.

Cloves.—Prices were further marked down in Singapore during May, but quotations were nominal. Zanzibar averaged $34.50 per picul and Amboina $35.50 per picul as compared with $35 and $37.50 respectively in April.

Cardamoms.—According to the Ceylon Chamber of Commerce weekly reports, cardamoms, green, were quoted during May at 85 rupee cents to R1.10 cents per lb. rising to 90 cents to R1.02 cents per lb. at the close of the month.

Tobacco.—There was considerable variation in local prices for tobacco. The following are representative prices per picul: Kedah $11 to $35; Malacca $25 to $30; Kelantan $60 to $90; Perak North $25 to $60 and Perak Central $19 to $82 according to quality.

The above prices are based on London and Singapore daily quotations for rubber; on the Singapore Chamber of Commerce Weekly Reports for the month and on other local sources of information. Palm oil reports are kindly supplied by Messrs. Guthrie & Co. Ltd., Kuala Lumpur; the Singapore prices for coffee and arecanuts by the Lianqui Trading Company of Singapore, and tuba prices by Messrs. Mackay & Co., Singapore.

1 picul = 133⅓ lbs. The Dollar is fixed at two shillings and four pence.

Note.—The Department of Agriculture will be pleased to assist planters in finding a market for agricultural produce. Similar assistance is also offered by the Malayan Information Agency, 57, Charing Cross, London, S.W.1.

GENERAL RICE SUMMARY*

April, 1935.

Malaya.—April imports into Malaya of foreign rice were 44,875 tons, and exports 12,952 tons, net imports being 31,923 tons. Net imports for the period January to April, 1935, totalled 144,964 tons, a decrease of 2.3 per cent. when compared with the previous year.†

Of the imports during April, 1935, 50 per cent. were consigned to Singapore, 12 per cent. to Penang, 7 per cent. to Malacca, 24 per cent. to the Federated Malay States and 7 per cent. to the Unfederated Malay States. Of the total, 61 per cent. came from Siam, 30 per cent. from Burma, 8 per cent. from French Indo-China and 1 per cent. from other countries.

Of the April exports, 68 per cent. were consigned to the Netherlands Indies and 32 per cent. to other countries. The various kinds of rice exported were as follows:—Siam 7,978 tons (61.6 per cent.), Burma 3,378 tons (26.1 per cent.), French Indo-China 345 tons (2.7 per cent.), parboiled 1,076 tons (8.3 per cent.), local production 175 tons (1.3 per cent.).

India and Burma.—Foreign exports for the first quarter of 1935 were 630,000 tons, an increase of 49.3 per cent. Of these exports 4.6 per cent. were to the United Kingdom, 9.4 per cent. to the Continent, 20.3 per cent. to Ceylon, 36.2 per cent. to the Straits Settlements and the Far East and 29.5 per cent. to other countries. The 1934 percentages were 14.7, 19.0, 24.4, 19.9, and 22 respectively.

Burma's total exports of rice and bran (*Bangkok Times*, 6th May, 1935) from 1st January to 30th March, 1935, aggregated 1,135,147 metric tons, as compared with 976,612 metric tons in 1934, an increase of 16.2 per cent.

Siam.—Exports of rice from Bangkok for the first four months of 1935 totalled 569,883 tons as compared with 578,828 tons in 1934. The 1935 figures are provisional.

Japan.—The latest information available was published in the Summary for March 1935.

French Indo-China.—Entries of padi into Cholon during the first quarter of 1935 totalled 797,461 metric tons, an increase of 76.3 per cent. Exports of rice were 580,351 metric tons, an increase of 62.5 per cent.

The Netherlands Indies.—No further information is available since the Summary for February 1935.

Ceylon.—Imports for the first four months of 1935 were 172,326 tons, an increase of 9.1 per cent. as compared with 1934. Of the 1935 imports 14.7 per cent. were from British India, 72.5 per cent. from Burma, 1.9 per cent. from the Straits Settlements, and 10.9 from other countries. The corresponding 1934 percentages were 16.8, 62.6, nil, and 20.6.

* Abridged from the Rice Summary for April 1935, compiled by the Department of Statistics, Straits Settlements and Federated Malay States.

† It is to be understood throughout the summary that all comparisons and percentage increases or decreases are in relation to the corresponding period of 1934.

Europe and America.—Shipments to Europe from the East for the period 1st January to 11th April, 1935, were 249,217 tons, a decrease of 21.6 per cent. as compared with 1934.

Of the 1935 shipments 48.4 per cent. were from Burma, 40.4 per cent. from Saigon, 8.8 per cent. from Siam, and 2.4 per cent. from Bengal. The 1934 percentages were 33.5, 47, 14.5, and 5 respectively.

Shipments from the East to the Levant for the period 1st January to 17th March 1935 aggregated 14,681 tons, as compared with 10,566 tons in 1934, an increase of 38.9 per cent.

Shipments to Cuba, West Indies and America for the period 1st January to 21st March, 1935, totalled 54,096 tons, as compared with 18,031 tons in 1934.

WHALE OIL PRODUCTION.

The *"Bulletin des Matieres Grasses"* for March, 1935, p. 57, reproduces the following statistics relative to the production of whale oil over recent years :—

Year	No. Whales caught	Antarctic	Arctic	frica	North Pacific	Japan	Total Oil in Barrels
1920	11,369	5,441	1,456	1,310	1,763	1,279	407,327
1921	12,174	8,448	310	1,263	129	1,487	471,141
1922	13,940	7,023	918	2,335	1,356	1,506	639,276
1923	18,120	9,910	1,204	3,105	1,363	1,422	817,314
1924	16,839	7,271	1,667	3,649	1,102	1,526	716,246
1925	23,253	10,488	1,523	4,384	1,892	1,875	1,040,408
1926	28,193	14,219	1,588	4,646	1,804	2,148	1,152,536
1927	24,175	12,665	1,403	4,144	2,064	1,546	1,191,922
1928	23,524	13,775	1,561	3,835	1,412	1,607	1,321,313
1929	27,896	20,341	1,159	3,362	1,241	1,463	1,886,082
1930	37,674	30,167	1,472	3,498	975	1,312	2,799,042
1931	42,874	40,201	703	823	—	1,147	3,686,976
1932	12,797	9,572	827	1,043	319	1,036	915,842
1933	28,668	24,327	1,257	1,168	591	1,325	2,596,778

(1 barrel = 170 kilos = 374 lbs.)

In a subsequent note by M. B. Bjelke, on the production of whale oil during the 1934—1935 season, it is mentioned that the season just ending will show a production from the South and Antarctic Seas of about 2,400,000 barrels, or practically 420,000 tons, not including some of the oil from Japanese and South American sources.

Producers have had no difficulty in disposing of this stock in advance, says the journal, as Germany has taken practically all of the unsold oil at a price of £15 c. i. f. German ports, naked in tanks. This quantity amounts to about 70,000 tons, and makes Germany the largest buyer of whale oil this season, contrary to preceding years when the position was held by Great Britain and Holland. The good results obtained for sales this season will probably mean a renewed fitting out by the whaling companies for next season, concludes the writer.

AGRICULTURAL SHOW, RAUB, PAHANG.

A small district agricultural show was held at Raub, Pahang, on 6th May, 1935. As the prize fund and space available were limited, exhibitors were confined to the Malays.

The schedule embraced the usual range of classes, pride of place being given to cereals, which consisted mainly of the prize winning exhibits from the mukim competitions in connexion with the All-Malayan Padi Competition. Satisfaction was expressed at the high quality not only of the cereal exhibits, but of the vegetables.

The Department demonstrated a full-sized rubber smoking cabinet, suitable for use on small holdings and also staged exhibits of high-yielding pure strains of padi which are known to be suitable to local conditions, and instructional exhibits in connexion with poultry keeping.

MALAYAN AGRICULTURAL EXPORTS, APRIL, 1935.

PRODUCT.	Net Export in Tons.				
	Year 1934.	Jan.-April 1934.	Jan.-April 1935.	April 1934.	April 1935.
Arecanuts ...	18.882	12,547	8,250	2,798	2,437
Coconuts, fresh † ...	100,826†	31,485†	31,924†	9,833†	9,099†
Coconut oil ...	25,485	8,331	9,799	2,080	2,528
Copra ...	95,618	33,329	39,080	5,830	8,714
Gambier, all kinds ...	2,170	693	931	134	259
Oil cakes ...	11,273	4,231	2,691	1,070	456
Palm kernels ...	3,196	862	1,071	365	246
Palm oil ...	15,852	3,912	7,092	1,668	2,669
Pineapples canned ...	66,633	20,660	20,489	6,371	5,615
Rubber ¶ ...	479,371¶	163,901¶	131.468¶	39,484¶	34,680¶
Sago,—flour ...	10,503	3,403	4,595	66*	869
„ —pearl ...	6,177	1,307	1,486	541	376
„ —raw ...	7,079*	1,763*	2,127*	683*	404*
Tapioca,—flake ...	5,761	2,972	582	800	78
„ —flour ...	1,842*	671*	305*	139*	30
„ —pearl ...	15,770	5,246	4,850	1,471	1,856
Tuba root ...	481	215½	177	65	43½

† hundreds in number. * net imports. ¶ production.

Correction : *Malayan Agricultural Journal*, May 1935 p. 255 Malayan Agricultural Exports, March 1935.

Oil cakes. For 265 in last column *read* 460.
Palm kernels. For 460 in last column *read* 265.

MALAYAN PRODUCTION IN TONS OF PALM OIL AND KERNELS

(As declared by Estates)

Period.	Palm Oil		Palm Kernels	
	F.M.S.	U.M.S.	F.M.S.	U.M.S.
January 1935 ...	1,062.3	339.3	174.0	49.6
February „ ...	977.4	220.9	161.7	38.5
March „ ...	1,104.3	334.2	172.6	48.6
April „ ...	1,008.2	328.0	151.2	40.4
Total ...	4,152,2	1,222.4	659.5	177.1
Total-January to April 1934	3,734.5	824.3	637.0	159.6
Total for year 1934 ...	12,965	4,510	2,013	795

ACREAGES OF TAPPABLE RUBBER NOT TAPPED ON ESTATES OF 100 ACRES AND OVER, FOR THE MONTH ENDING 30TH APRIL, 1935.

STATE OR TERRITORY	Acreage of Tappable Rubber end 1933 (*d*)	ESTATES WHICH HAVE ENTIRELY CEASED TAPPING		ESTATES WHICH HAVE PARTLY CEASED TAPPING (*a*)		AREA OF TAPPABLE RUBBER NEVER BEEN TAPPED		Total (3) + (5)	Percentage of (9) to (2)
		Acreage	Percentage of (3) to (2)	Acreage	Percentage of (5) to (2)	Acreage	Percentage of (7) to (2)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
STRAITS SETTLEMENTS :—									
Province Wellesley	44,285	50	0.1	11,002	24.9	849	1.9	11,052	25.0
Malacca	121,152	356	0.3	20,797	17.2	3,193	2.6	21,153	17.5
Penang Island	1,366	194	14.2	236	17.3	148	10.8	430	31.5
Singapore Island	28,842	3,700	12.8	6,760	23.5	689	2.4	10,460	36.3
Total S.S. ...	195,645	4,300	2.2	38,795	19.8	4,879	2.5	43,095	22.0
FEDERATED MALAY STATES :—									
Perak	260,595	3,706	1.4	48,225	18.5	14,183	5.4	51,931	19.9
Selangor	310,003	6,385	2.1	51,854	16.7	13,755	4.4	58,239	18.8
Negri Sembilan	233,592	10,193	4.4	40,657	17.4	14,481	6.2	50,850	21.8
Pahang	46,712	3,524	7.5	21,289	45.6	11,421	24.4	24,813	53.1
Total F.M.S. ...	850,902	23,808	2.8	162,025	19.0	53,840	6.3	185,833	21.8
UNFEDERATED MALAY STATES :—									
Johore	365,400	10,705	2.9	31,651	8.7	22,614	6.2	42,356	11.6
Kedah (*b*)	126,588	3,880	3.1	22,423	17.7	19,349	15.3	26,303	20.8
Kelantan	25,793	5,800	22.5	1,000	3.9	5,800	22.5	6,800	26.4
Trengganu (*b*)	4,543	Nil	Nil	68	1.5	53	1.2	68	1.5
Perlis (*c*)	1,181	Nil	Nil	608	51.5	Nil	Nil	608	51.5
Brunei	(*d*) 4,991	Nil	Nil	1,423	28.5	879	17.6	1,423	28.5
Total U.M.S. ...	528,496	20,385	3.9	57,173	10.8	48,695	9.2	77,558	14.7
TOTAL MALAYA ...	1,575,043	48,493	3.1	257,993	16.4	107,414	6.8	306,486	19.5

Notes :—(*a*) Area out of tapping on Estates which have partly ceased tapping refers to areas definitely being rested and excludes areas on any tapping round.
(*b*) Registered Companies only.
(*c*) Rendered quarterly.
(*d*) Figures are as reported by estate managers.

MALAYA RUBBER STATISTICS — TABLE I

STOCKS, PRODUCTION, IMPORTS AND EXPORTS OF RUBBER, INCLUDING LATEX, CONCENTRATED LATEX AND REVERTEX, FOR THE MONTH OF APRIL, 1935 IN DRY TONS.

State or Territory 1	Stocks at beginning of month 1			Production by Estates of 100 acres and over		Production by Estates of less than 100 acres estimated 2		Imports				Exports including re-exports				Stocks at end of month			Consumption 3	
								during the month		Jan. to April inclusive 1935		during the month		Jan. to April inclusive 1935						
	Ports	Dealer	Estates of 100 acres and over	during the month	January to April inclusive 1935	during the month	January to April inclusive 1935	Foreign	From Malay States & Labuan	Foreign	From Malay States & Labuan	Foreign	Local	Foreign	Local	Ports	Dealers	Estates of 100 acres and over	during the month	January to April inclusive 1935
MALAY STATES :—	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Federated Malay † States ...	...	10,489	10,134	11,133	45,174	7,422	24,158	17	Nil	17	Nil	14,577	2,851	59,529	12,411		11,357	10,401	9	33
Johore ...	...	2,219	3,792	4,180	15,679	3,716	15,153	Nil	12	Nil	81	2,150	5,448	9,306	19,501	...	2,364	3,957	...	...
Kedah ...	...	237	2,135	2,396	10,065	1,090	3,895	Nil	Nil	Nil	Nil	1,372	2,054	6,084	7,212	...	338	2,094	...	...
Perlis ...		15	26	12	50	12	55	Nil	Nil	Nil	Nil	Nil	22	Nil	101	...	19	24	...	...
Kelantan ...	...	289	240	327	1,280	517	1,733	Nil	Nil	Nil	Nil	150	579	484	2,219	...	381	263	...	...
Trengganu ...	...	55	50	264	940	132	471	Nil	Nil	Nil	Nil	Nil	396	Nil	1,411	...	55	50	...	...
Brunei	...	6	29	47	188	50	231	Nil	Nil	Nil	Nil	Nil	83	Nil	396	...	13	36	...	...
Total Malay States	...	13,310	16,406	18,359	73,376	12,939	45,696	17	12	17	81	18,249	11,433	75,403	43,251	...	14,527	16,825	9	33
S. SETTLEMENTS :-																				
Malacca ...	...	2,849	1,395	1,406	5,455	672	2,525	Nil		Nil		2,656		11,879		...	2,896	1,475	...	...
Province Wellesley	...	1,240	506	490	1,933	253	848	Nil		Nil		7,114		27,973		...	1,364	507	...	...
Penang ...	...	12,162	11	14	60	168	323	2,101	12,009	9,099	45,330		Nil		Nil	2,392	11,313	15	...	...
Singapore ...	2,447	33,884	216	183	792	186	413	13,911		53,168		25,341		92,622		3,140	31,982	234	36	155
Labuan	6,607	36	Nil	Nil	Nil	10	47	178		886		Nil		Nil		...	53	Nil	...	...
Total Straits Settlements	9,054	50,171	2,128	2,093	8,240	1,289	4,156	16,190	12,009	63,153	45,330	35,111	Nil	132,474	Nil	5,532	47,608	2,231	36	155
TOTAL MALAYA	9,054	63,481	18,534	20,452	81,616	14,228	49,852	16,207	12,021	63,170	45,411	53,360	11,433	207,877	43,251	5,532	62,135	19,056	45	188

†Figures for the Dindings in columns 3 to 8 are included under F.M.S. with effect from 1st January, 1935.

TABLE II
DEALERS' STOCKS, IN DRY TONS 3

Class of Rubber	Federated Malay States	S'pore	Penang	Province We'sly D'dings M'cca.	Johore	Kedah
22	23	24	25	26	27	28
DRY RUBBER	10,193	29,178	9,841	4,110	1,768	181
WET RUBBER	1,164	2,804	1,472	216	596	157
TOTAL ...	11,357	31,982	11,313	4,326	2,364	338

TABLE III
FOREIGN EXPORTS

PORTS 29	For month 30	January to April 1935 31
Singapore ...	35,811	140,933
Penang ...	10,875	44,860
Port Swettenham.	6,379	20,830
Malacca ...	295	1,254
MALAYA ...	53,360	207,877

TABLE IV
DOMESTIC EXPORTS 4

AREA 32	For month 33	January to April 1935 34
Malay States ...	29,695	120,565
Straits Settlements	3,339	
MALAYA ...	33,034	120,565

Notes :—

1. Stocks on estates of less than 100 acres and stocks in transit on rail, road or local steamer are not ascertained.
2. The production of estates of less than 100 acres is estimated from the formula : Production + Imports + Stocks at beginning of month = Exports + Stocks at end of month, + Consumption, *i.e.*, Column [7] = Columns [13] + [14] + [17] + [18] + [19] + [20] — [2] — [3] — [4] — [5] — [9] — [10]. For the Straits Settlements the production of of estates of less thau 100 acres is represented by sales or exports as shown by cess paid.
3. Dealers' stocks in the Federated Malay States are reduced to dry weights by the following fixed ratios: unsmoked sheet, 15% wet sheet, 25% scrap, lump, etc., 40%; stocks elsewhere are in dry weights as reported by the dealers themselves.
4. Column (33) and (34) represent exports of rubber subject to regulation which, for Singapore and Penang Islands are represented by sales or exports as shown by cess paid.
5. The above, with certain omissions, is the Report published by the Registrar-General of Statistics, S.S. and F.M.S., at Singapore on 23 May, 1935.

METEOROLOGICAL SUMMARY, MALAYA, APRIL, 1935.

Locality.	Air Temperature in degrees Fahrenheit							Earth Temperature		Rainfall								Bright Sunshine.		
	Means of			Absolute Extremes						Total.		Most in a day.	Number of days.					Total.	Daily Mean.	Per cent.
	A. Max.	B. Min.	Mean of A and B.	Highest Max.	Lowest Min.	Lowest Max.	Highest Min.	At 1 foot	At 4 feet			Amt.	Precipitation .01 in or more	Precipitation, .04 in or more	Thunder-storm	Fog morning obs.	Gale force 8 or more			
	°F	°F	°F	°F	°F	°F	°F	°F	°F	in.	mm.	in.						Hrs.	Hrs.	
Railway Hill, Kuala Lumpur, Selangor ...	91.5	72.1	81.8	95	70	85	74	84.9	85.6	13.00	330.2	2.17	22	20	12	9	1	161.00	5.37	44
Bukit Jeram, Selangor ...	89.4	72.9	81.1	91	70	87	75	85.0	87.2	5.83	148.1	1.34	15	14	2	1		202.35	6.75	55
Sitiawan, Perak ...	90.2	73.1	81.7	92	70	85	75	85.0	85.7	6.40	162.6	1.24	14	11	2	1		206.10	6.87	56
Temerloh, Pahang ...	90.0	72.9	81.5	94	70	82	75	86.0	86.3	2.54	64.5	1.04	12	8	7	4		168.20	5.61	46
Kuala Lipis, Pahang ...	89.9	71.9	80.9	93	69	80	75	84.1	84.5	7.80	198.1	1.80	16	13	4	22		181.80	6.06	50
Kuala Pahang, Pahang ...	86.9	74.7	80.8	90	72	81	77	84.6	85.1	14.20	360.7	3.55	17	15	1			206.55	6.88	56
Kallang Aerodrome, S'pore ...	86.7	75.5	81.1	91	71	81	78	82.4	83.7	3.27	83.1	0.62	15	13	1		1	153.90	5.13	42
Butterworth, Province Wellesley ...	88.8	74.5	81.7	91	73	83	77	86.7	86.2	9.14	232.2	2.14	19	15	1			236.70	7.89	65
Bayan Lepas Aerodrome, Penang ...	88.8	74.4	81.6	91	72	85	77	86.3	87.5	8.92	226.6	2.61	15	12	7			221.85	7.39	61
Bukit China, Malacca ...	86.2	73.7	79.9	91	72	81	76	84.8	85.5	5.01	127.3	1.04	13	12	1		1	191.55	6.39	52
Kluang, Johore ...	89.2	71.3	80.3	93	69	81	73	82.8	82.9	8.83	224.3	2.50	16	15	10	17		165.20	5.51	45
Bukit Lalang, Mersing, Johore	86.4	72.6	79.5	92	71	80	74	83.4	82.4	2.23	56.7	0.86	11	8	5	2		194.50	6.48	53
Alor Star, Kedah ...	90.4	73.4	81.9	95	71	78	76	86.7	86.1	10.21	259.3	1.62	17	16	13	1	2	226.20	7.54	62
Kota Bahru, Kelantan ...	90.2	72.4	81.3	92	70	85	75	84.2	84.2	3.19	81.0	0.59	10	9	3	3	1	238.20	7.94	65
Kuala Trengganu, Trengganu	88.7	73.1	80.9	92	71	84	74	84.1	84.4	5.82	147.8	2.12	11	11	2	2	1	230.00	7.67	63
HILL STATIONS.																				
Fraser's Hill, Pahang 4268 ft.	75.1	63.4	69.3	78	62	69	65	73.1	73.0	4.95	125.7	1.00	19	16	4	12		148.40	4.95	41
Cameron Highlands, Tanah Rata, Pahang 4750 ft. ...	74.4	55.7	65.1	79	47	69	63	70.2	69.8	10.92	277.4	1.77	25	24	1		1	126.55	4.22	35
Cameron Highlands, Rhododendron Hill, Pahang 5120 ft. ...	72.8	59.9	66.3	77	56	66	62			11.46	291.1	1.74	25	22	1		1	135.45	4.51	37

Compiled from Returns supplied by the Meteorological Branch, Malaya